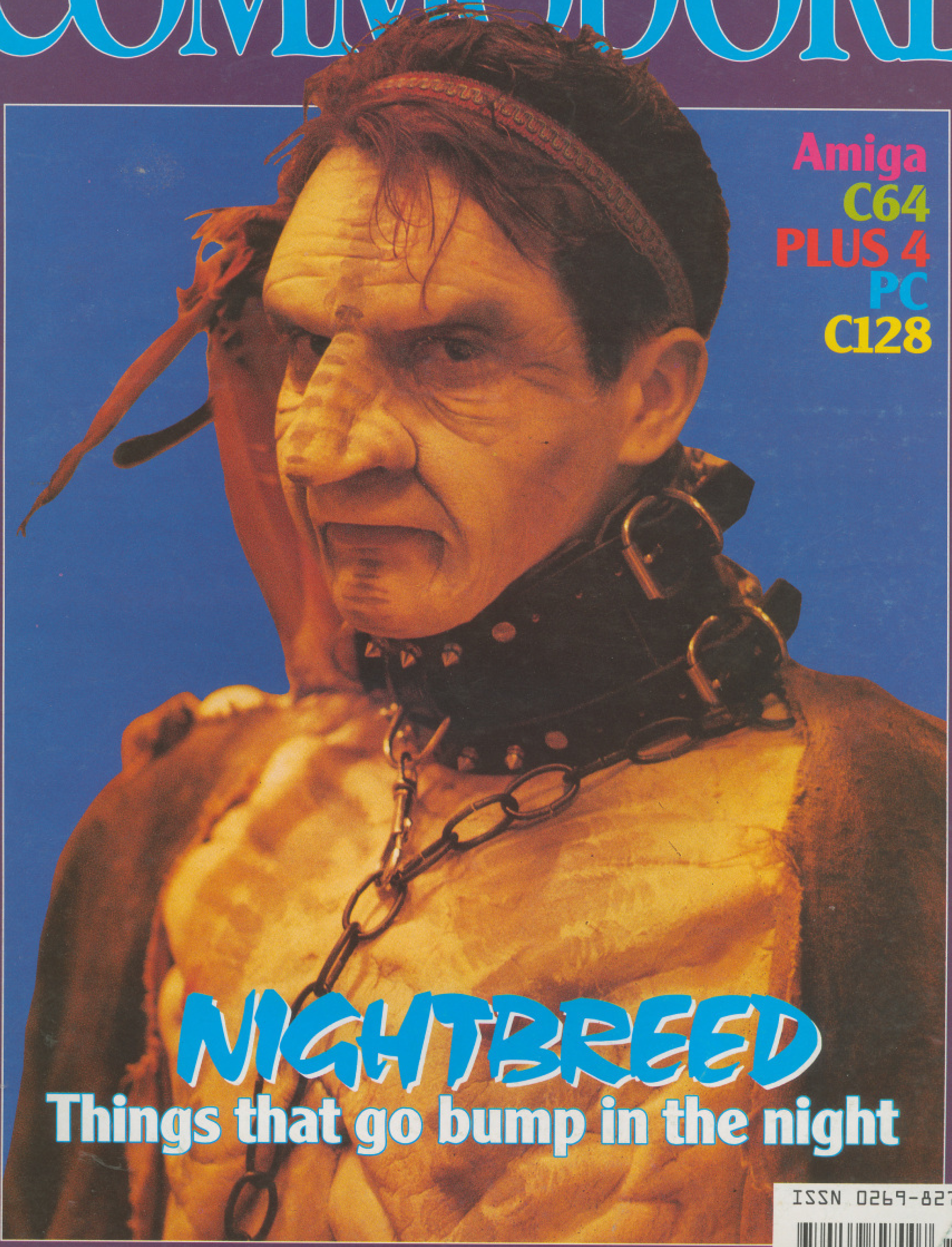
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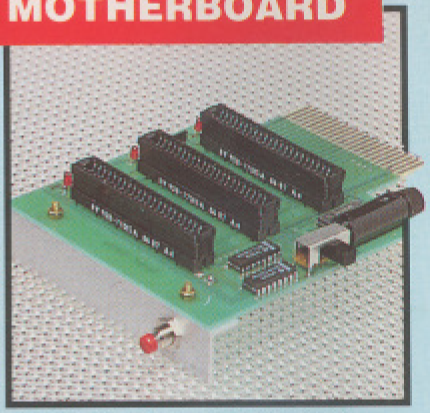


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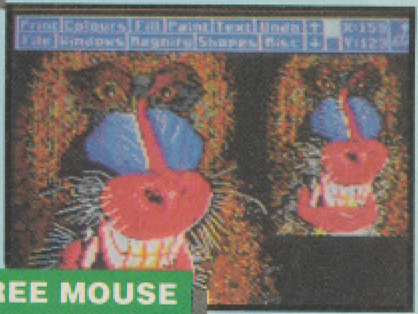
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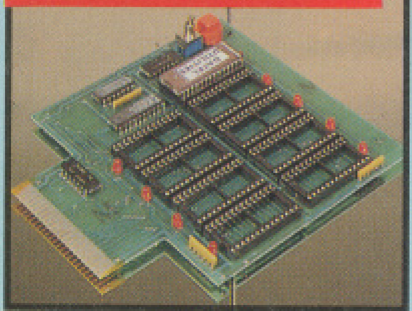
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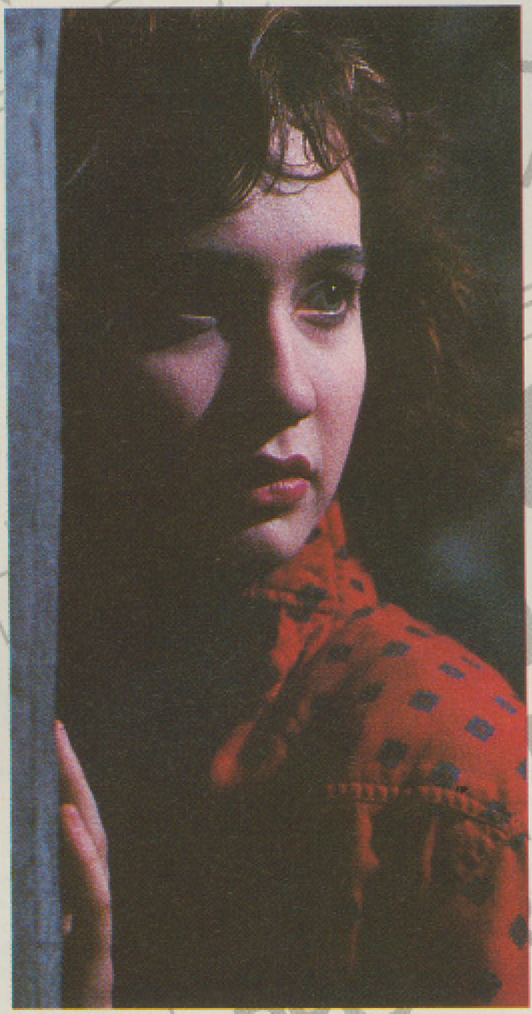
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YOUR PROGRAMMER
PULL OUT PROGRAM SECTION
SEE PAGE 31

THIS MONTH'S PROGRAMME

REGULARS

GAMES

A gentle mist rolled through the office. Rik noticed that his colleagues around him were acting in a peculiar manner. Their eyes were hollow and, if stared into, could be described as bottomless pits. He started to fret and shift uneasily in his seat, and the others started towards him. As they approached, their top lips drew back to reveal slathering gums full of small, sharp needles where their teeth had once been; truly this was the end...

...Or just another day in the *Your Commodore* office.

We arrive at another issue, and what an issue. Some computer magazines may be heralding exclusives this month, but none will have Nightbreed.

This new Clive Barker film has been delayed until April 1990 (and so has the computer game from Ocean), but that doesn't stop us giving you a taste of what is to come – thanks to Steve Jones of Sparkline and, of course, Clive Barker himself.

But this is not the only meaty morsel in your FUN FILLED SENSATIONAL SOARAWAY *YC*. We also have our pullout programming section, a feature on Role-Playing Games (with an exclusive Hound of the Shadow preview). A Lifestyles 2000 report, and no less than 15 pages of games reviews. As well as all your favourite regulars; surely we are the only complete Commodore magazine on the market.

I must dash now but if you're at the PC show on 27th September-1st October, drop by and we'll have a chat...

Rik Henderson

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Origination: *Ebony*
Printers: *Chase Webb*

Your Commodore incorporating Your 64 is a monthly magazine appearing on the first Friday of each month. Argus Specialist Publications Editorial and Advertisement office, *Your Commodore,* Argus House, Boundary Way, Hemel Hempstead HP2 7ST. Telephone: (0442) 66551. Subscription rates upon application to Your Commodore Subscriptions Department, Infonet Ltd, 5 River Park Estate, Berkhamsted, Herts HP4 1HL. U.S.A. Subscrpition Agent: Wise Owl Worldwide Publications, 4314 West 238th Street, Torrance CA 90505 U.S.A.

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ABC
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Quick on the draw

DOMARK, the company renowned for its license of Trivial Pursuit, the computer game, has done it again. The license grabbing team at Domark headquarters are set to launch the computer version of the hit game Pictionary.

If you haven't come across Pictionary where on Earth have you been living? It bears a certain resemblence to charades, but you are expected to draw the word for your team members rather than act it.

Domark claims that it has an "innovative graphics package" that allows the drawer to produce lines of varying thicknesses, circles, rectangles, solids, etc., with ease.

Pictionary, the compuer game, allows teams to either draw the words for their team members, or, if they don't feel up to it the computer can draw the words.

Pictionary should be out in September for the C64, PC and Amiga. Contact Domark on 01-780 2222 for more information.

Micro Illusions – on their own

US based Micro Illusions is set to go on their own in the UK following a recent split from its UK distributor Activision.

After a couple of months uncertainty as to just who was going to publish which product, Micro Illusions has announced that all of its products will be distributed in the UK by itself. Watch out for new titles with the Mirco Illusions label in the near future.

Micro Illusations can be contacted on (0480) 496497.

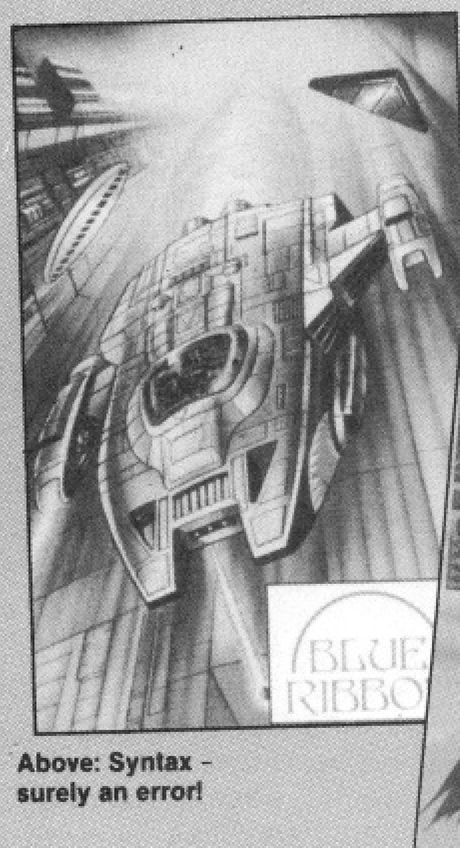
Budget Blast-em

DONCASTER based Blue Ribbon is set to get your trigger finger twitching with its latest 2.99 C64 release – Syntax.

Armed with the latest cassette inlay sqwaking on about you having to handle the latest impulse drive fighter you can't go far wrong.

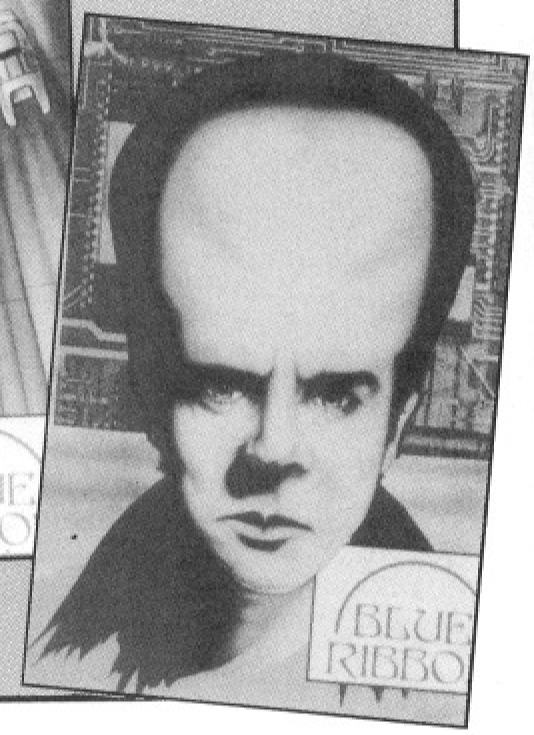
If you're the sort of person who prefers something that challenges your brain cells rather than your trigger finger then Hi Q Quiz may be right up your street. Also priced at 2.99, the game features questions on Sport, Entertainment and Geography.

Blue Ribbon can be contacted on (0302) 321134.



Above: Syntax – surely an error!

Below: The Tefal men are coming...



PREVIEW



It's a joystick – honest!

WHEN the picture of Spectravideo's latest joystick fell out of the envelope it was greeted with cries of "What on Earth's that". With a styling that looks as though it would be more at home on the bridge of the new Starship Enterprise than the living room floor the QS-118 Wizmaster appears to offer everything that the professional gamester requires.

The QS-118 features 3 different control mechanisms, push button finger and thumb control or two different sized levers, 2 fire buttons, auto fire and a computer system select switch.

Three versions of the Wizmaster are available, the QS-118F priced at £11.95 is the one that works with the C64 and Amiga. Contact Spectravideo on (0235) 555455 for details.

Super Wonderboy is Dynamite

SOME game titles have obviously had hours spent on deciding on a title, Activision can't be blamed for the exciting title of Super Wonderboy, one of its latest coin-op conversions. Super Wonderboy is the second of Activision's wonderby arcade licences. The hero of the original game, launched way back in 1987, has now grown up and is called upon to defend the people of wonderland from a fire-breathing dragon.

Super Wonderboy features 11 levels, 10 different weapons, winged boots, various types of armour, different shields – everything a young hero could want.

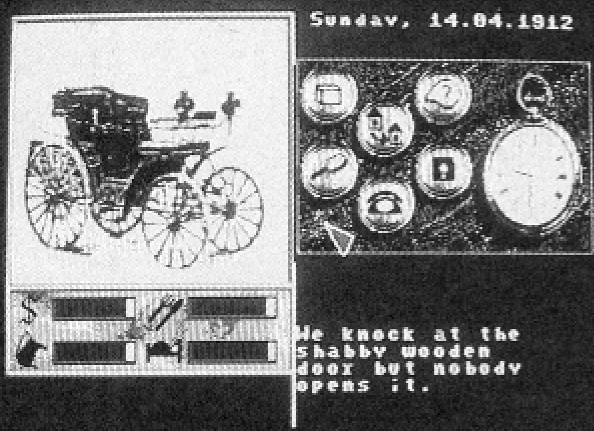
Activision's second coin-up release is Dynamite Dux. Activision claims that we are in for a treat with the cutest game around featuring cartoon style graphics, six levels, two bonus levels with extra baddies on the 16 bit versions.

Watch out for these releases in September. Contact Activision on (0734) 311666 for more info.

New show for Capital

A NEW computer show is set for launch in London in November. The Computer Shopper Show will take place at Alexandra Palace from November 24 to 26. Well known companies already pledging to appear at the show include Evesham, Postronix, Trilogic and Tynesoft. Commodore UK will be taking a major role with the "Wonderful World Of Commodore" described by the organisers as a "major exhibition in its own right within the Computer Shopper Show".

So if you're after pre-Christmas bargains get to Ally Pally in November.



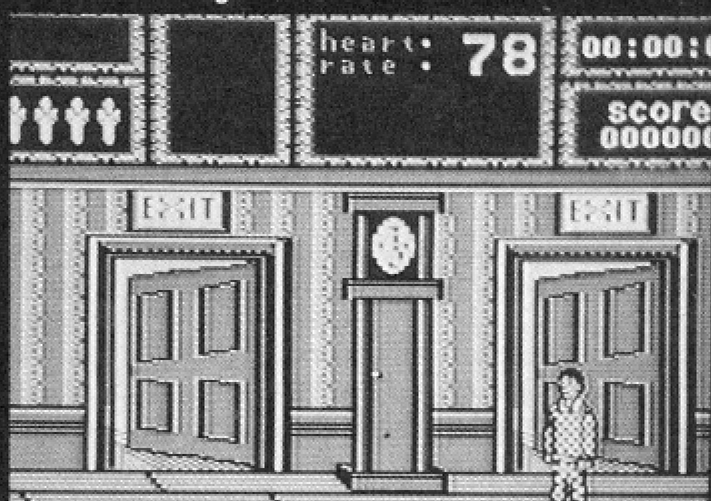
Above: Mystery of the Mummy – *Rainbow Arts*



Above: Crossbow – The Legend of William Tell – *Screen 7*



Above: Fallen Angel – *Screen 7*



Above: Weird Dreams – *Mirrorsoft*



More from the Amig

By Burghard Lehma

AMIG WORKB

When thinking about what to write in this column, it just crossed my mind that I haven't so far touched the more astonishing things the Amiga can do, like its amazing graphics and sound capabilities. Maybe people would like in a column like this to hear more about how to get into programming these. (By the way, as I said in the first of this column, let me know about your interests and opinions!)

On the Amiga you have basically two ways of accessing the more powerful features of the machine: The first involves programming the hardware directly. If you are a machine code programmer, this is less difficult than you might think.

The second way, and the much better one to start with, is by making use of the many facilities the operating system offers you. That is, by using the library functions of the Amiga.

The libraries give you access to nearly all the advanced features of the Amiga, especially when it comes to graphics. You get most of what you want from the graphic library which includes some 97 functions. These allow you to draw lines, fill in spaces, animate objects and much more.

The graphics library also includes some text printing routines.

On the Amiga text is created just like any other graphics. The advantage of this is that text and graphics can be intermixed freely.

If you program in Basic, most of the advanced facilities of the Amiga are available to you in form of Basic commands. *Amiga Basic* from *Microsoft* is quite good in this way, once you get to know it. The only apalling thing about it is the editor. In my book the *Amiga Basic* editor ranks tops in the list of the worst programs ever written.

But the word is, that *Microsoft* is developing a new version of their Basic which will be bundled with Workbench 1.4., expected to get onto the market sometime next year.

Anything has to be an improvement on the appalling present editor. I only hope that Microsoft will indeed spend some considerable time on improving the editor and not concentrate all their time on developing fancy new Basic commands and then do the editor again on the quick!

Amiga Basic also allows you to use the Amiga libraries. This is one of its strongest features, even though I would advise you to consider changing to C or assembler if you want to use the libraries extensively and do serious programming.

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GA BENCH

This brings me to my pet-hate, which is C.

C is supposed to be the language of the Amiga. Most of the examples given in the Amiga References Manuals, published by *Addison Wesley,* are given in C.

Unfortunately, C is expensive, and, considering the time it takes to compile and link a program in C, I can't see for the life of mine what the supposed time advantage in program development over assembler is to be!

I program in assembler, using the *GenAm* assembler by *HiSoft*. Most programs I can execute almost immediately after I have written them and inspect the results of my efforts. Even if I break a large program down into modules and have to link them, I can look at the fruits of my labour far sooner than with C!

At this point a spot of advice to assembler programmers: Even if you have an assembler that can use the *Amiga Include* files, don't use them! It takes far too long for the assembler to assemble all the Include files which are needed from disk. Sometimes your source needs only one or two variables out of hundreds in a complete Include file.

Instead, type the library offsets and other systems equals your source needs at the beginning of the source file in yourself. This is initially a bit more work, but once you have done this, you can use most of it over and over again by just merging them into any new source file you are writing – that is, if your assembler has got a merging facility, which it surely has, if it allows you to use Include files... This additional work pays off handsomely in having your source files assembled in next to no time.

If you program in C, you have no other choice but to use the Include files. This is why compiling a C program can be such a long drawn out process.

At this point some of you might inquire, what on earth *Include* files are.

Include files are simply lists of system variables compiled by Commodore in order to make life supposingly easier for C and assembler programmers. On other machines you have to compile these offsets and variables yourself from books and manuals. The Include files, which come with every C-compiler and with most assemblers, make it unnecessary for you to type these things in yourself. And, as I've said, C-compilers depend upon Include files.

There are two types of Include files: The i-Include files for C-compilers and the h-Include files for assemblers. All Include files are categorized by the Amiga libraries. E.g. there is an Include file for the Exec library, one for the Intuition library and so on.

If you want to have a look at an Include file, simply use the "type" command from CLI or load the Include file into Ed, the CLI editor, or any wordprocessor.

Amiga Basic also requires Include files if you want to use libraries and devices from it. Unfortunately, Amiga Basic can't do with either the i-Include files nor the h-Include files. It needs special Include files, called "bmaps". There is a program on the Extras disk which converts any Include file into a bmap-file which can be used by Amiga Basic.

Finally, programming the Amiga hardware directly is, as I said, easier than you might think. What you do here simply is you write certain values into certain fixed locations. These are the registers of the special chips of the Amiga. This is very similar to programming, let's say, the *SID* sound chip on the *Commodore 64*.

Most of the information you'll need for that you'll find in the *Amiga Hardware Reference Manual* published by *Addison Wesley*. For people who are into machine code programming, this is the easiest to digest of the four massive reference manuals.

Even better, especially if you want lots of example programs in assembler, is the *Amiga System Programmer's Guide* published by *Abacus*. And then, I may tell you, there will very soon be a book on this subject on the market, written by yours truly and published by *Dabs Press* in England.

If you ever want to attempt to program the Amiga hardware directly, you have to be aware that the Amiga is a multitasking machine. Therefore, you can't program the Amiga as if you've got the whole machine to yourself. Whatever memory your program needs you have to allocate using the functions provided by Exec. If you program the hardware directly, very often it is a good idea to briefly suspend multitasking by using the *Exec Forbid* library function.

Always rememeber to switch multitasking on again with the *Permit* function and, when you are done, to free the memory you have allocated for your program! Otherwise it isn't fair to other programs!



Above: The Probe V. I want one!

FUTURE SHO

Rik Henderson visits The Daily Express Lifestyles 2000, and is thrust forward in time to sample a taste of the future.

Photography by Frane Maroevic

Although **Lifestyles 2000** was hyped in just about every from of media, I really did not know what sort of show to expect. I knew that there would be many companies jostling to grab the punters' attention, but how much were they going to express the idea of life in the year 2000? Not much was the answer I came up with. But does that stop one from enjoying oneself, not bloody likely.

There were many stands, the majority of which being larger than an average one bedroom flat, although whoever came up with the idea of placing **Sky TV** next to **BSB** had better think a little for the next show – and a next show there will undoubtedly be.

We (my photographer pal, Frane, and myself) meandered into Olympia with our knees knocking (well, gently pressing the doorbell) with anticipation, when our eyes popped out and our tongues rolled to the floor; for there in front of us was the bar.

Once our palates had been christened with the beer of the year 2000, we set about to unearth some world shattering exclusives. Our first stop was the rather splendid **Ford** stand, with its car of the future the Probe V. A very sleek car indeed and one to be seen in. It has actually been heralded as more aerodynamically efficient than a super-sonic F15 military jet fighter. I'd swap it for my Raleigh Winner anytime.

We then strolled off to the **Network Southeast** carbuncle of a stand – after we'd broken out of the trance that the Probe V had placed us in – which was a lot better inside than out. It presented an accurate representation of what commuters – myself included – will be travelling on in the early nineties. It was very nice too, with digitised displays presenting time, destination, and current stop (this is in the first class section), as well as individual light switches for each passenger. The only problem I have with this is that the first line these trains will be installed on will be the Chiltern line. For those who don't know, Wembley Stadium is on the Chiltern line; I wonder how long the 77 vehicles planned for delivery in late 1990 will last?

On our way to more fun and future frolics we passed the **Kaliber** stand, and on a hot day, such as it was, the prospect of a free drink was a pleasant one to say the least. "But it's got no alcohol in it!" exclaimed Frane, oh what a chortle we had.

The **BSB** stand was far more extravagant than the one accommodating **SKY**, but then it had to be because of **BSBs** failure to release a satellite dish that works. They were even giving away free badges of yourself, digitised on a normal video camera. Naturally I went back a second time, there's nothing better than having something (or two) to remember the show with, even if they make you look a complete dipstick. But again, I do not see how this links into the theme of the year 2000.

The most impressive stand of all must go to **Tomorrows World**, their stand was so large that they had constructed a complete studio in the centre. Around the studio were lots of small exhibits, featuring inventions and gadgetry that had been displayed on the show at one point. An honourable mention must go to the light drums, this provided hours of endless laughter (or at least a few minutes) watching people trying to hit objects that they could not see. Practical? Not on your nelly; not for drums anyway. We watched an episode of TW being made with the public controlling all aspets of the production, one could hardly tell the difference between this and the real version.

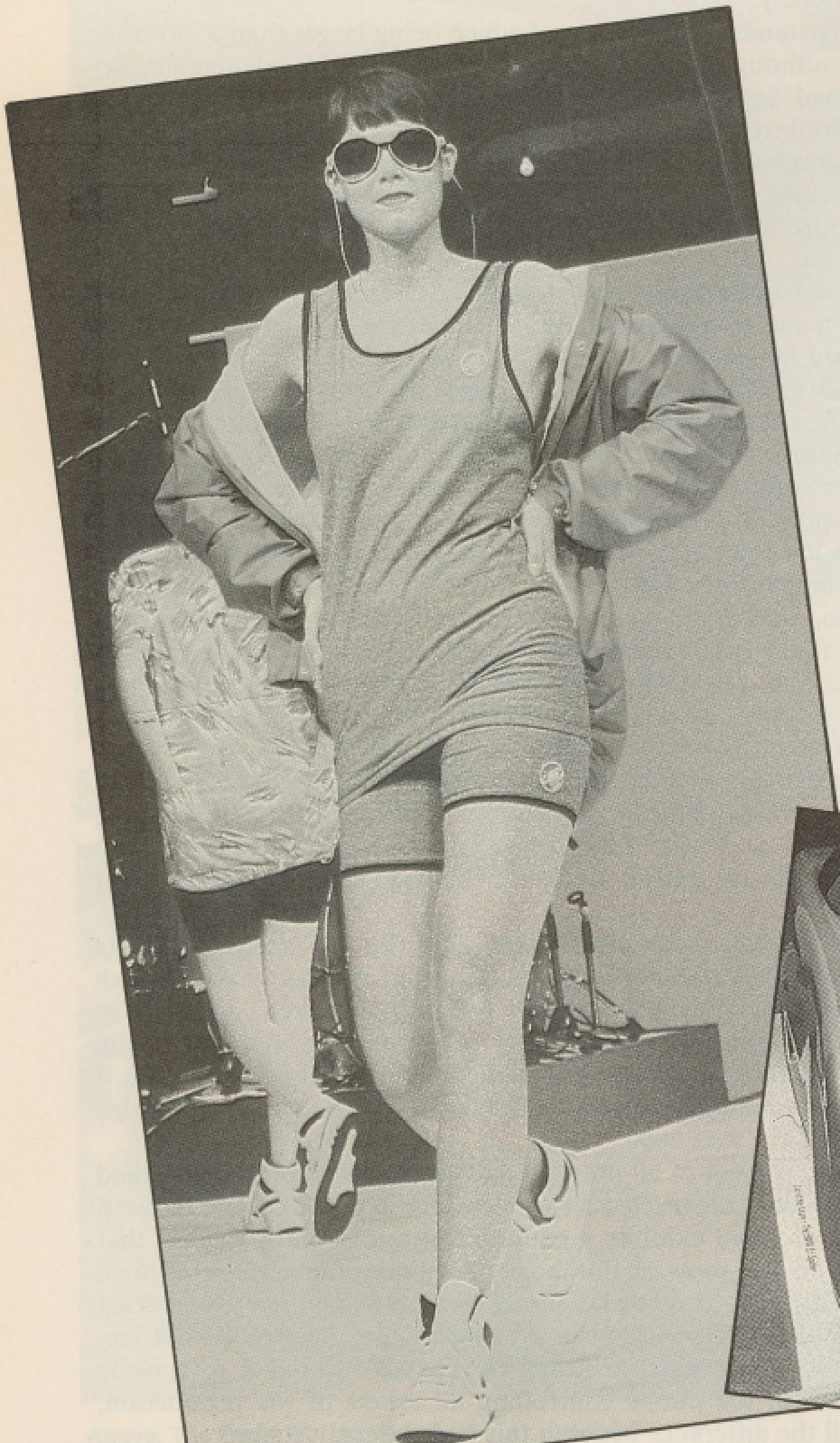
The ultimate part of the show, for me, was the fashion show. To mull you into the mood of actually looking at the clothes and not the pretty girls parading them, the escapade had a theme. "Its the year 2000, the ozone layer has been destroyed, the green house effect is total" was the scenario, but honestly

OCK



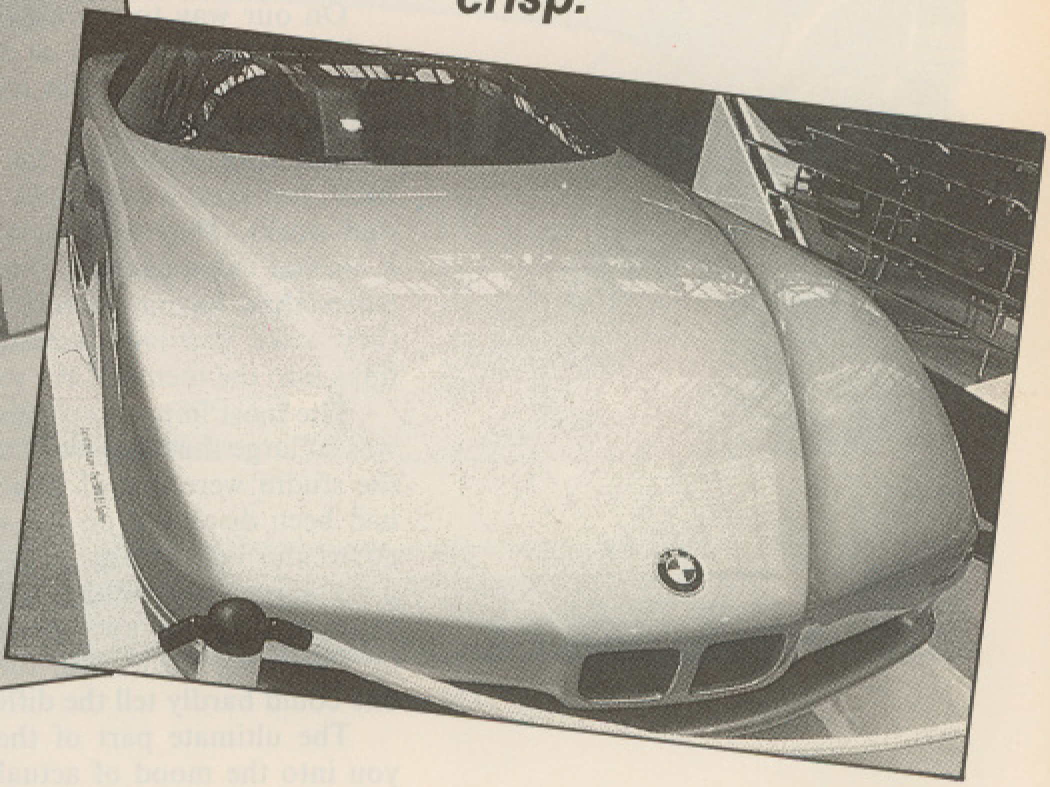
Above: Biggles Henderson in a rather perculiar aircraft.

Below: If that's a model, I wouldn't mind sticking it together!





"I don't really see how a pair of cycling shorts and a rather flimsy top will stop you being fried to a crisp."

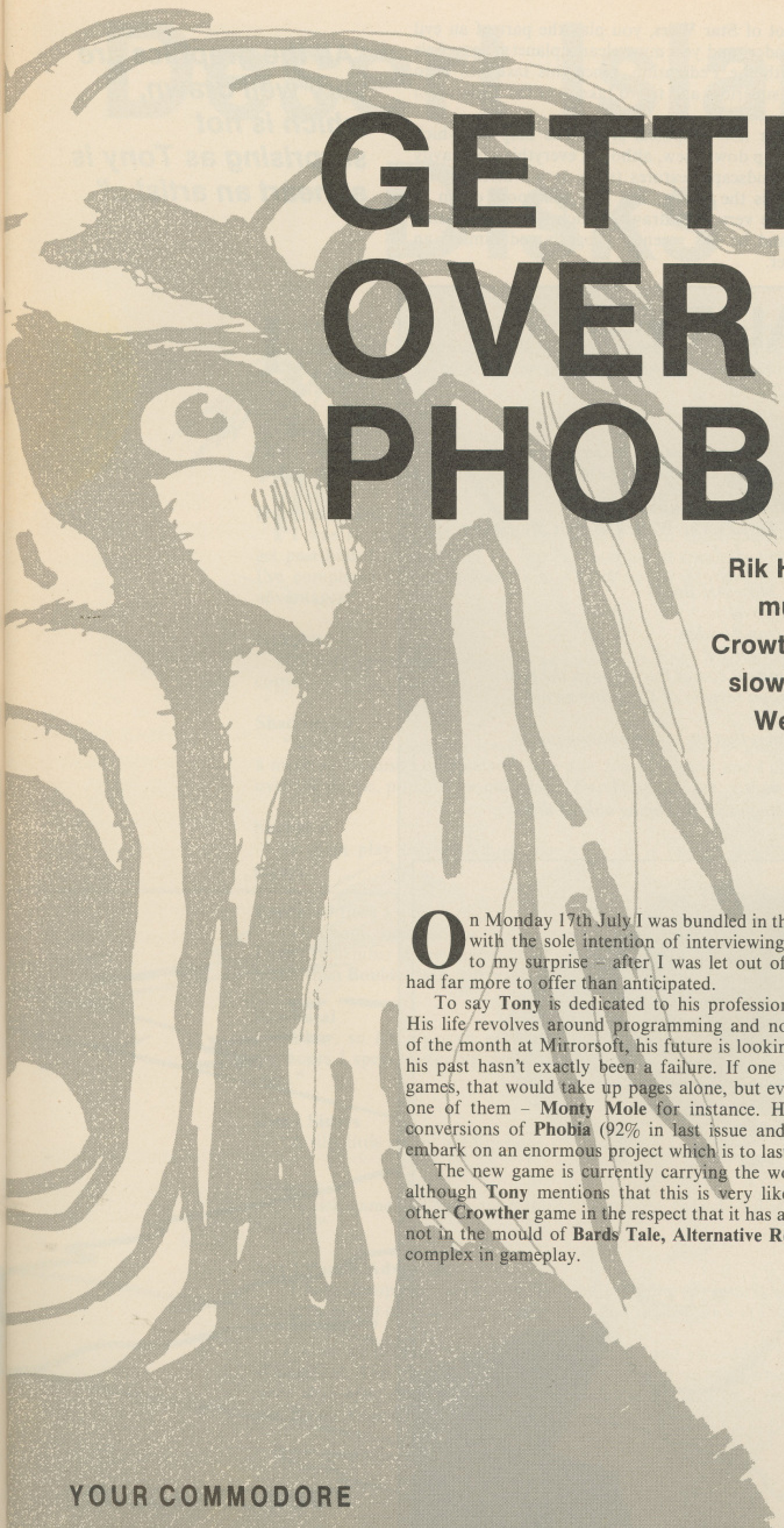


I don't really see how a pair of cycling shorts and a rather flimsy top will stop you being fried to a crisp. Oh well, the girls were pretty.

They must of been dying in the boiler suits that they had to wear for part of it, the whole exhibition was baking hot, and Frane and myself welcomed every chance we could get to have a rest. Fortunately we had plenty of chances, and therefore experienced a wonderful time.

Maybe **Lifestyles 2000** wasn't quite the right title for such an exhibition – I would have liked to have seen a little more futuristic equipment, in preference to a bubbly spa bath – but for all out enjoyment you cannot fault it. Frane had a great time too, and even walked away with a radio cap as a prize (photographers nowadays, pah).

Also missing was an indepth look at the essential environmental issues – far more important for the year 2000 than satellite television – although Friends of the Earth were there, just not in force.



GETTING OVER PHOBIA

Rik Henderson not so much grills Tony Crowther, but bases him slowly on gas mark 4. Well marinated of course.

On Monday 17th July I was bundled in the back of the new Cookemobile with the sole intention of interviewing a certain **Tony Crowther**. But to my surprise – after I was let out of the sack of course – Sheffield had far more to offer than anticipated.

To say **Tony** is dedicated to his profession would be an understatement. His life revolves around programming and now that he seems to be flavour of the month at Mirrorsoft, his future is looking very bright indeed. However, his past hasn't exactly been a failure. If one was to list all of his published games, that would take up pages alone, but everyone would recognise at least one of them – **Monty Mole** for instance. Having recently finished all the conversions of **Phobia** (92% in last issue and a YC SURESHOT), he is to embark on an enormous project which is to last eight to nine months.

The new game is currently carrying the working title of Federation War, although **Tony** mentions that this is very likely to change. It is unlike any other **Crowther** game in the respect that it has a Role Playing theme – although not in the mould of **Bards Tale, Alternative Reality** etc, – and it will be fairly complex in gameplay.

Based very loosely on the plot of **Star Wars**, you play the part of an evil commander (not unlike Darth Vader) and you must clear a planet from rebels who do not wish to comply with the Federation. Once this task has been completed you can turn on your superiors and try to take over the Federation base (not unlike the Death Star).

All this is done using a rather new graphical style. The map on which the action takes place is seen in a top down view, although everything is heavily 3D. Columns, walls and other landscape features (such as a waterfall) rise out of the darkness below towards the screen, and you can zoom down to see the floor. All the graphics are very well drawn, which is not surprising as **Tony** is at heart an artist, and he has recently programmed himself an easy to use Amiga Sprite Designer.

"All the graphics are very well drawn, which is not surprising as Tony is at heart an artist..."

PERSONALITY PROFILE

Name: *Tony 'Ratt' Crowther*
Age: *About 24*
Favourite Computer: *Amiga*
Favourite Software Company: *Mirrorsoft (naturally)*
Favourite Films: *Robocop, Pink Floyd's The Wall, The Last Starfighter, Any Schwarzeneggar movie*
Favourite TV Show: *LA Law*
Favourite Books: *68000 Manual, Most Art Books*
Favourite Food: *Lisa's Cooking (grovel!)*
Favourite Records: *Anything by Iron Maiden*
Favourite Sports: *Cycling, Snooker on TV*
Favourite Paper: *The Trader because it comes free through the post*
Favourite Magazines: *Any with good reviews of Crowther games*
Worse Computer: *Spectrum*
Worst Computer Games: *Any games that rip off an existing one*
Worst TV Show: *Neighbours*

Likes: *Programming*
Dislikes: *Lisa in a bad mood, Crap games, Not being able to drive*
Other Hobbies: *Painting (Art)*



Desert Islands Disks

I asked **Tony** that if he could have a computer – he requested an Amiga – and a gigantic power supply whilst stranded on a desert island, but was only allowed to bring along ten pieces of software, what would he take? This is his list...

An Assembler
"This would eradicate the need for any other utilities as I could program my own. I don't like using other people's utilities anyway."

Dungeon Master
"I was so engrossed in **DM** that when I faced the wizard, and couldn't get past him, I phoned FTL in America and asked them for help. Since then I've completed **Chaos Strikes Back** – working for Mirrorsoft does have its advantages."

Nebulus
"A very good game, possibly swayed by the fact that I received a free copy."

Shadowgate
"Although this was my least favourite of the Mindscape games, it deserves a mention because I completed it in a day. David Bishop and I communicated over the phone, proving the old adage 'Two heads are better than one'".

Shanghai
"I often play this with Lisa (the wife). It is one of the few games she enjoys."

Emerald Mines 1 + 2
"I'll count these as one game, because I've got them both on one disk. I can't remember if they are called **Emerald Mines** or not, but I think they're better than **Boulderdash,** although almost clones."

Bombuzal
"Okay, so it's my own game. I still play it often, it reminds me of all the hours I spent designing the screens. A lot of thought went into the later ones."

Giana Sisters
"A silly little game, but fun none-the-less."

Surgeon
"A sick game and very enjoyable. It's a shame though, my disk has gone corrupt."

Any Infocom Adventure
"I have completed **Zork One**, but the Infocom adventures are easily my favourite games of all time. I prefer games that require a lot of thought."

And so we departed the Crowther household and visited my favourite part of Sheffield. The Pub. *Congratulations must also go to the Crowthers as only three days after the interview Mrs Crowther gave birth to a bouncing baby girl, Sarah Anne Crowther.*

Dear PC Corner,
I am writing to profess my thanks for the recent inclusion in your magazine of the Commodore PC's feature; and to inquire as to whether you may possibly be able to assist me with a few queries I have.

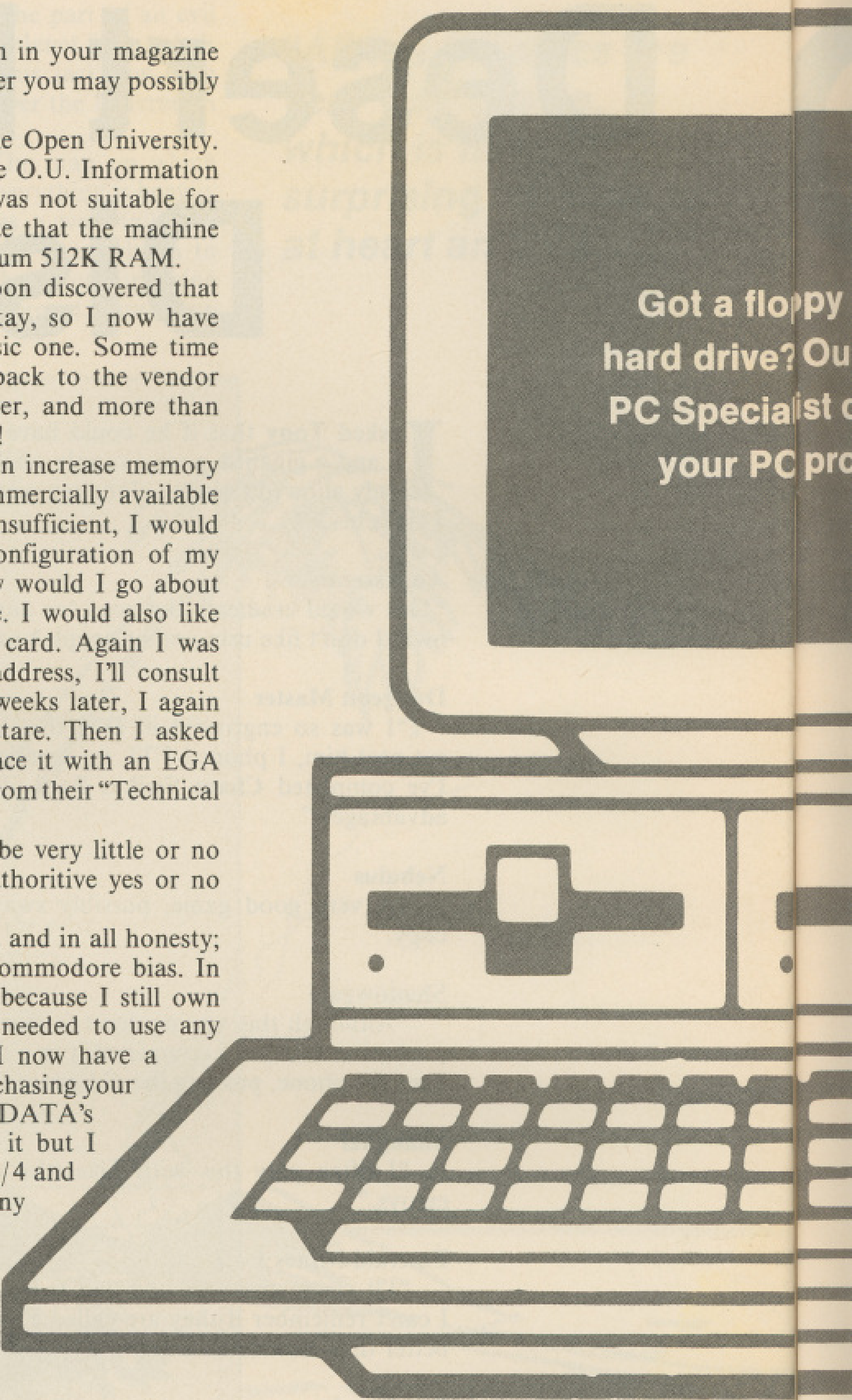
I recently decided to pursue a series of studies with the Open University. Armed with my trusty C64 I set about enquiring about the O.U. Information Technology course. Unfortunately I found that my C64 was not suitable for the course as it is not IBM compatible. The O.U. stipulate that the machine used for the course should use MS-DOS and have a minimum 512K RAM.

I therefore began to check out my local vendors. I soon discovered that I could get hold of a Commodore PC1, which I did. Okay, so I now have a machine matching the O.U.'s criteria, albeit a very basic one. Some time in the future I would dearly like to beef it up. I want back to the vendor and asked my questions of a blank-faced branch manager, and more than 2 weeks later I am still awaiting some form of written reply!

As I purchased a very basic PC, I am aware that I can increase memory on the motherboard up to 640K, however, with some commercially available software requiring upwards of 1Meg, obviously 640K is insufficient, I would like to add more. I asked therefore, with the present configuration of my machine, is it possible to add a hard card, and if so, how would I go about it? In the fullness of time, and as funds become available. I would also like to add other facilities such as a modem card and a fax card. Again I was met with a blank stare and "Give me your name and address, I'll consult our technical people and come back to you". Some two weeks later, I again visited the shop "No answers yet", and the same blank stare. Then I asked if I could upgrade the CGA card from the PC1 and replace it with an EGA card, or even a VGA card. I'm currently awaiting an answer from their "Technical People" on that too!

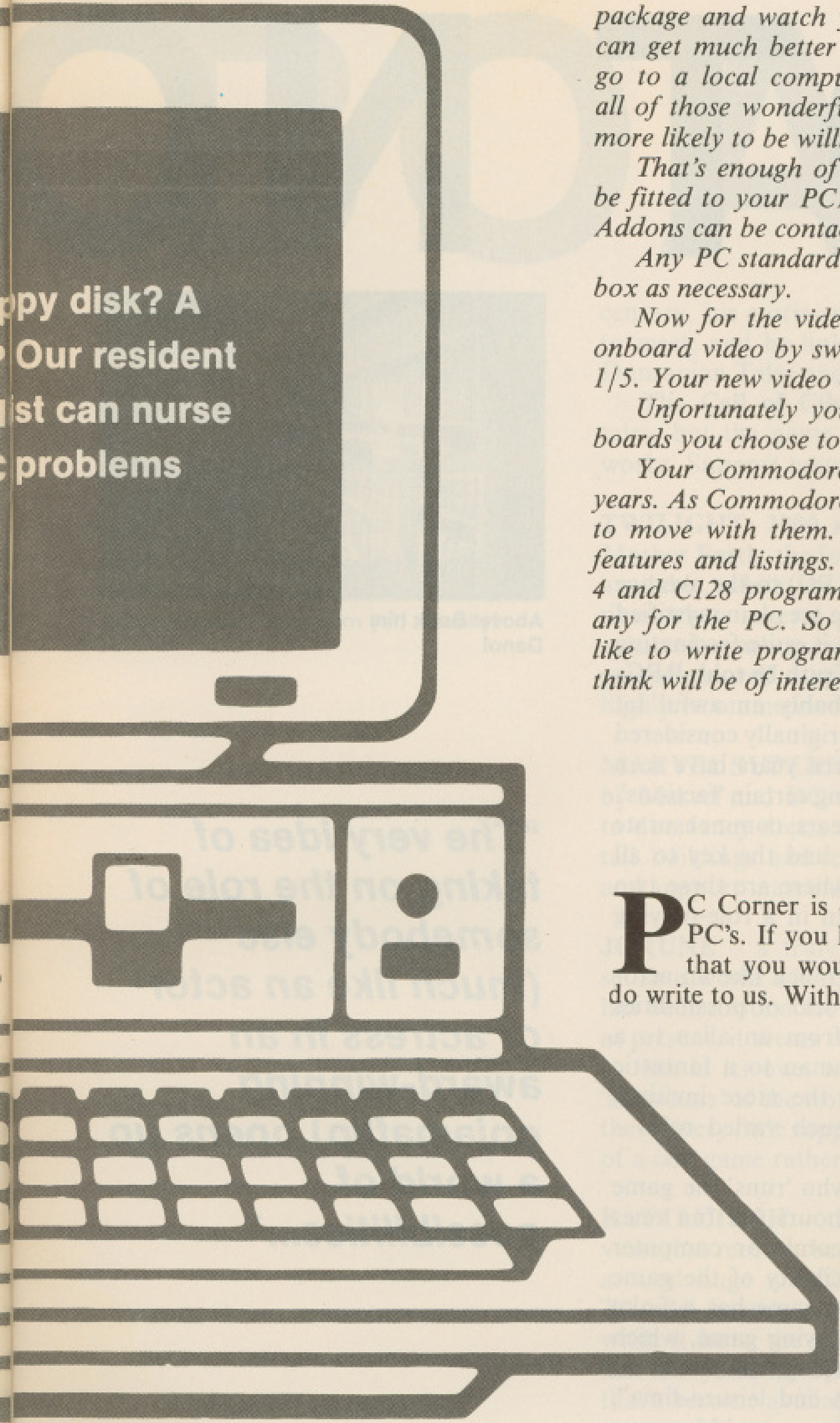
As the PC1 is an IBM clone, I assumed that there'd be very little or no problem with what I want to do, but I would like an authoritive yes or no before I commit my precious finances.

I bought *Your Commodore* whilst I was using my C64, and in all honesty; have been earnestly looking for a PC magazine with a Commodore bias. In fact, I purchased the August 89 edition of the magazine because I still own my C64, and I wanted to study the listings to see if I needed to use any of them, when I stumbled across your PC feature. As I now have a PC1 and a C64; I now have twice the reason to continue purchasing your publication. When I purchased the PC1, I got Concept DATA's ABLE 1 software and GW Basic that was bundled with it but I am curious as to wheter or not, as with the C64, the Plus/4 and the C128, you provide listings in the magazine; are there any plans to include a similar facility for the PC's either in GW Basic or in any of the other languages available with these machines?
Alistair Ian McCall, Thornaby-on-Tees.



Dear Alistair,
The problem of trying to get information about a computer from a sales man is an old, old story. You don't say exactly where you purchased your PC1 but I'm betting that it was from a main stream high street dealer. In my opinion the after sales help/service provided by many larger shops is simply atrocious, once they've got your money they simply want to give you your nice new

PC CO



package and watch you disappear into the distance. I have found that you can get much better help if you purchase computers, peripherals ect. if you go to a local computer dealer. OK so they may not be able to offer you all of those wonderful deals that you get on the high street but they are far more likely to be willing to offer you advice in the long term.

That's enough of me griping on, now for your queries. A hard card can be fitted to your PC1. Addons in Southampton produce one that is suitable. Addons can be contacted on (0703) 620202.

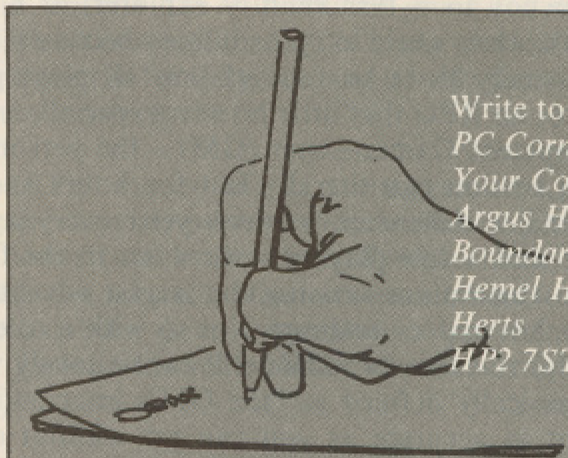
Any PC standard modem and fax card can be plugged into the expansion box as necessary.

Now for the video cards, replacing the CGA card involves disabling the onboard video by switching on switch 4 as detailed in the user manual, page 1/5. Your new video card will need to be placed in the expansion box also.

Unfortunately you only have three available so it's your decision which boards you choose to use.

Your Commodore has prided itself on the quality of its listings for many years. As Commodore venture into new computers it is the magazines intention to move with them. Thus, yes we do intend to produce PC programming features and listings. However, while we have a large number of C64, Plus/4 and C128 programs arriving on our doorstep eac day we have never had any for the PC. So come on out there if you are into the PC and would like to write programming features or have produced a program that you think will be of interest to other readers of Your Commodore, get in touch!

PC Corner is designed to be your forum in the World of Commodore PC's. If you have any opinions that you would like to share, questions that you would like to see answered, or simply ideas for articles then do write to us. Without your help we can't make this column work.



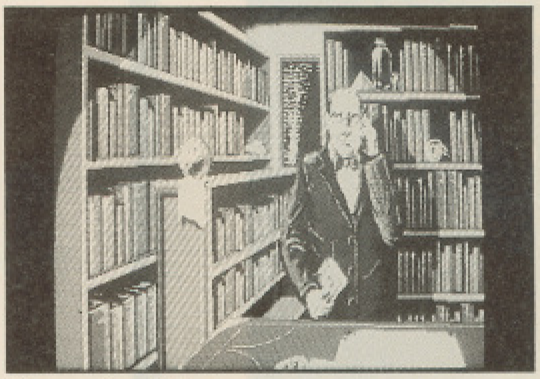
Write to:
PC Corner
Your Commodore
Argus House
Boundary Way
Hemel Hempstead
Herts
HP2 7ST

Due to the pressures of getting a magazine out each month we can only answer queries through this column and cannot answer them on an individual basis.

ORNER

WOT NO

Intergalactic layabout Alex Bardy explores the enormous world of Role Playing Games.



Above: Book him Dano!

Explain the basic principles of a role-playing game (RPG) to the average 'man in the street' and opinions tend to be varied, some are plain mystified ("a boardgame without a board?"), while others find it quite fascinating ("the best thing since sliced bread and...erm...monopoly"). Truth be told, RPGs have been around for well nigh 13 years now, and probably an awful lot more if people had only recognised it in times long passed; originally considered a direct descendant of the wargame, these past two or three years have seen the role-playing game become something of an artform among certain 'factions'. 'The Hobby' has grown immensely in popularity in recent years, commensurate with the comic and computer games industries actually – and the key to all this growth? Quite simply, creativity and leisure. And nowhere are these two factors more in evidence (or indeed, more important) than in a role-playing game...

The very idea of taking on the role of somebody else (much like an actor or actress in an award-winning oojamaflip) opens up a world of possibilities for the individual, but when that role can be anything from an alien to a superhero, a cowboy to a 19th century explorer, or a human to a fantastic creature of myth, that world of possibilities becomes all the more inviting, and there are usually three or four of you all playing such varied roles – *that's* what makes an RPG that little bit extra speciall.

"The very idea of taking on the role of somebody else (much like an actor or actress in an award-winning oojamaflip) opens up a world of possibilities..."

Given a competent Gamesmaster (GM) – the person who 'runs' the game – a role-playing session can literally last for hours and hours (all fun ones at that!). The major difference between your everyday comic or computer adventure game and a role-playing session lies in the flexibility of the game – even the largest computer running the largest adventure game has a finite number of branches and/or endings. Not so with a role-playing game, which can (theoretically) run forever, while still continuously varying; the 'limits' of an RPG are classically defined as "the GM's imagination and leisure time", and that's about as accurate as you can get without doing a wobbler over the philosophical/metaphysical possibilities, etc.

Some of the more popular RPGs currently available include:

DUNGEONS & DRAGONS (D&D)/ADVANCED DUNGEONS & DRAGONS (AD&D) – the grandfather of them all, **D&D** is still very popular even today, not lest because of the huge amount of support material available for the system. For those who don't know (and haven't guessed), **D&D** is a fantasy-orientated game with elves, fairies, orcs, and yes, dragons too – all making up a colourful and dangerous backdrop for adventure.

TRAVELLER/MEGATRAVELLER – another 'oldie' although this time the backdrop is a huge universe of galaxy-hopping travellers. Laser rifles, giant spacesports, and loads of technological marvels abound in this game, and support material (sourcebooks, scenarios, etc.) is extensive to say the least.

CALL OF CTHULHU (CoC) – the first of the new breed of RPGs, **CoC** is an RPG tied not so much to a particular genre as to a particular world (or more accurately, to the 'worlds' of a particular author). The gentleman in question is one Howard Phillips Lovecraft, a nihilistic author of early 20th

BOARD



Above: I wasn't even born yet, actually!

century, his stories tell of some of the nastiest beasties you could never wish to meet, and he linked together two mythical worlds of such creatures (The Dunsanian Tales and The Cthulhu Mythos respectively).

The Call of Cthulhu RPG was originally based on Lovecraft's Mythos tales, but the game system has since been expanded to cover nearly all his works. Support material, once again, is generous. Recommended.

TWILIGHT: 2000 and 2300AD – two RPGs (loosely) set around our own Mother Earth, the former is one of the very few post-holocaust RPGs currently available, while the latter is set in – surprise, surprise – the year 2300 – a time when several powers (notably French, American, and Chinese) have achieved space travel, and colonised planets abound the galaxy. Both these games are well supported, and as an ardent fan of **2300AD**, the latter comes highly recommended.

MARVEL SUPERHEROES and DC HEROES – both of these games (licensed by Marvel and DC Comics respectively) allow prospective players the chance to don fancy dress, mask, and all-important tights, and to go around leaping tall buildings and levelling blocks with single blows, etc. Great fun for all, and support material isn't thin on the ground for either game...

JORUNE – a truly different RPG this, it's a sort of science-fantasy game set in a world where magic and science become one and the same. The game has been around for quite some time, and has something of a token following at present, it seems to be becoming increasingly popular though.

Set in its own world, **Jorune** has an awful lot going for it, the complete 'alien-ness' of the world it's set in is just the first of many plusses. Unfortunately, there's very little support material for the game, and it looks set to stay something of a cult game rather than anything else.

BATTLETECH – this 'RPG' started life as a wargame and, after almost 5 years, has recently become extremely popular with the masses. The game revolves around huge metallic beasts (much like those Transformers you see in the TV ads) beating the hell out of each other across all kinds of terrain. Fun while it lasts, the game has been given tremendous support (indeed, over the last few years no other game has matched it for the sheer volume of material that's become available).

GURPS – GURPS (Generic Universal Role-Playing System) is an attempt to cash in on *every* genreof roleplaying – the game system has been designed in such a manner that you can use it for all settings, be they fantasy, SF, cartoons, espionage, or whatever. It's an experiment that's proven very successful, and currently available are sourcebooks (with extra rules, etc.) for all types of RPG, and even particular authors – there are books specifically covering André Norton's WITCH WORLD thingy and Alan Dean Foster's books for example.

SPACE: 1889 (1889) – one of the newest RPGs to be released, it covers a kind of pseudo-historical 19th century where a guy called Thomas Edison has discovered space travel, and people like H G Wells and Jules Verne are most certainly *not* crazy. Venus, Mars, and the Moon are also inhabited (by lizardmen, martians, and selenites respectively). Oh, and lasers, the atom, fusion/fission, etc. haven't been discovered yet – if it all sounds a bit unreal, that's because it is, for it's a marvel of game design, and plays extremely well to boot! And all the Victorian 'dressing' does nothing but enhance the game's overall effect on the players. Support material is limited at the moment, but things seem to be picking up in this direction now. **1889** is my personal fave of the bunch at the moment but I'm sure I'll get over it soon, promise...

HOUND OF THE SHADOW

Those familiar with the **'Call of Cthulhu'** role-playing game will recognise the theme behind Electronic Arts latest computerised role-playing adventure. Having a distinct Cthulhu Mythos flavour, it is based in London in the rip-roaring 1920s – and we can be assured that there is more than a tad of horror involved.

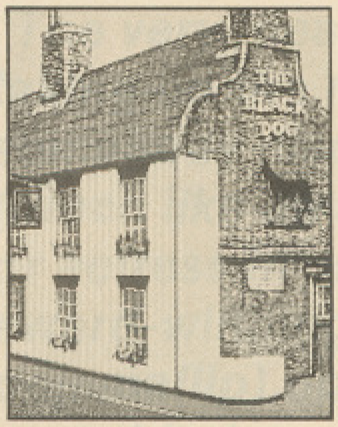
The first task to be performed, as in the RPG, is to create a character. This is done very impressively, using mood graphics to the maximum effect. You can be male or female – this is your first choice – American or British, and you can choose from numerous professions. Not only are there characteristics involved (you do not get to see them, only sentences on what sort of person you are) the skill system is enormous.

There are many skills which you possess, but they are all set at an average level. Once you have determined how experienced your character is to be – via age, etc – you get to raise some skills a little, in order to be more adept at certain tasks.



Right: It's not nice being grabbed by the ghoulies.





Left: What's this I spy, well blow me down it's a pub.

The gameplay itself is rather like a text adventure, although graphics are well distributed throughout. The difference between this and, say an Infocom adventure, is that **The Hound of the Shadow** is completely interactive. Depending on how proficient you are at certain skills, different text will come up at some sections. Every little feature that your character has, which makes him/her an individual, has an affect on the play, although it is possible to complete the game with any sort of character.

The parser is not enormous, nor is it overly complex, but this is not a programming error, it is in fact a feature. The parser is very simple to use indeed. This saves you the hassle of having to find the correct words to key into the computer in order to complete a simple logic problem.

Unlike most other adventures (which describes **The Hound of the Shadow** perfectly), this game goes not rely on objects to build a complex clue pattern. Instead people are the order of the day, provoking you to take more active role in what goes on around you, and allows you to slip into your character easily.

Every action undertaken saps away time, which is important to the plot. The timeline is a very important feature. This is to be stringently adhered to otherwise the Hound, for it is after you or your friend, will rip you to shreds in typical H. P. Lovecraft tradition.

The graphics are very moody, painted in a duo-tone style in a crumbly colour of beige/brown –much like those older photographs found in everybody's attic. The game text changes every time it is played with another character, and there are many, many small features added which make the game seem a little more personal to the particular character involved.

Although **The Hound of the Shadow** is not in the Bard's Tale mould, it is in every way as much an RPG, if not more so. The interaction level is superb, and rumour has it that if this is a success, more will follow with the ability to use your previous character(s).

Rik Henderson

A SHEEP IN WOLF'S CLOTHING

BIG WOBBLY COMPO
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BIG WOBBLY COMPO
BIG WOBBLY COMPO

Win a sword, care of those wonderful people at Audiogenic, in our Lone Wolf competition. Maim your neighbour, Slice a friend...

You too can be as barbaric as Hemel Hempstead; as muscular as Rik Henderson, with a Live Role-Playing sword made from foam (we don't want you hurting anybody now, do we. Do we?) This is the first prize in our Lone Wolf competition.

Also included as first prize are the two new Lone Wolf novels (signed of course). Four second prize winners receive the two signed books.

What you have to do is study the photograph to the right and think of some speech bubbles for what you think may have been said – the sillier the better.

Write them on the back of a postcard, or sealed envelope, and send them to:

Silly Buggars Compo, Your Commodore, Argus House, Boundary Way, Hemel Hempstead, HP2 7ST.

Closing date: 31st September 1989.

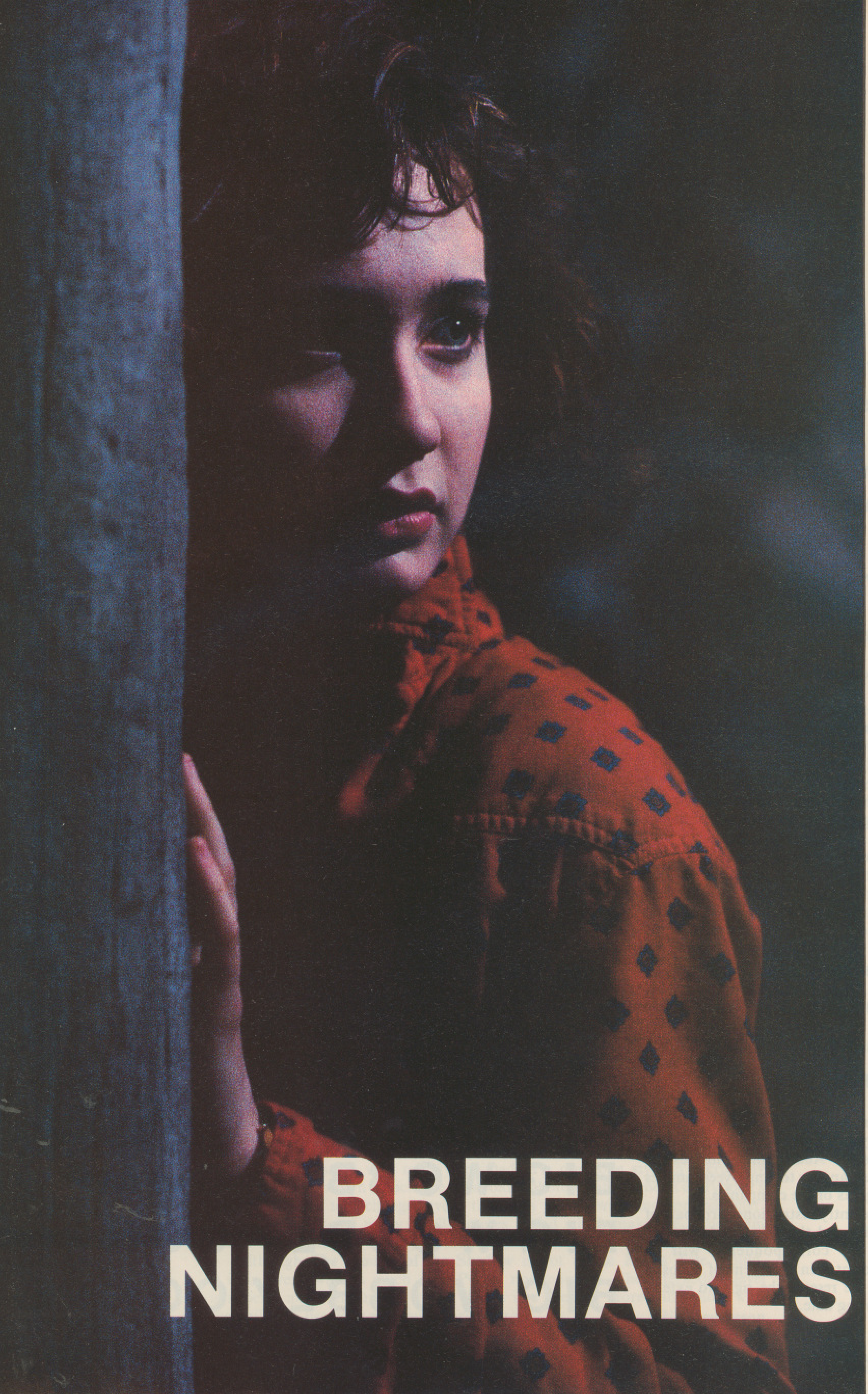


The Rules

Entries will not be accepted from employees of Argus Specialist Publications, or Audiogenic. This restriction also applies to employees families and agents of the companies.

The entry restrictions form part of the rules and the Editor's decision is final. No correspondence will be entered into. In the event of a postal strike, we reserve the right to extend the closing date.

BIG WOBBLY COMPO
BIG WOBBLY COMPO
BIG WOBBLY COMPO



BREEDING NIGHTMARES

Clive Barker's new film has a dark fantasy theme. Dave Hughes and Alex Blair talk to him on a very frantic, very elaborate, Pinewood set.

Photography by Murray Close

Clive Barker, although a prize-winning and highly-acclaimed horror writer, playwrite, critic and general man-of-the-moment among horror fans, it is without a doubt the film HELLRAISER for which he has earned himself mot notoriety. A brilliant, stylish, complex collage of ideas, images, brutality, secuality and death, HELLRAISER was Clive's directorial debut, a film made on a shoestring budget which has become *the* horror movie of the Eighties, establishing its central bad-guys, the Cenobites, as the new Freddy Kreugers, Michael Myers and Jason Voorhees. A sequel has already been released in the UK, although Clive himself merely oversaw the making of the movie, and there are plans for a third. Now Clive is working with a big budget, at a big studio, with big names and big ideas. As he told me on the set of the new picture, NIGHTBREED, "HELLRAISER was a little horror movie; this is a big fantasy movie. HELLRAISER was one house in Cricklewood; this is five sound stages at Pinewood Studios."

NIGHTBREED is based on one of Clive's own novels, CABAL. It follows the story of Boone, an innocent but mixed-up man convinced by his psychotic psychiatrist, Decker, that he is a mutliple murderer. Fleeing the authorities, Boone discovers a lost city wherein reside all the rejected horrors of the earth and, having unintentionally lead his pursuers to the city, fights to save it from those who would destroy that which they don't understand... It is written by Clive Barker and stars THE FLY, VIDEODROME and DEAD RINGERS director David Cronenberg and HILL STREET BLUES star Charlie Haid. Clive says it is "much more than a horror movie", describing it as having "more heart, less red meat" than his earlier films. A dark fantasy movie, then? "Absolutely," says Clive. "There is a large action element to it, and no movie that stars David Cronenberg can be entirely safe for minors."

The set itself is a mixed bag, placed as it is between the famous 007 sound stange and the top secret BATMAN set. Canadian police cars and trucks litter the exterior locations, where Clive delightedly points out the exact spot of waste ground where one of Decker's more heinous crimes is committed (sorry, this is a family magazine). Impressive enough is the unfeasibly high wall of the city, Midian, which has been breached by the Sherriff (Charles Haid) and his men as I arrive. Talk is of a major scene involving a crashing juggernaut, which involves some testing special effects, and Clive's air is of excited anxiety. Inside, elsewhere in the sprawling Buckinghamshire studios, the place is infested with every grotesquerie imaginable: NIGHTBREED is said to contain over two hundred separate monsters, with HELLRAISER special effects team Image Animation once more providing some astounding visuals and, working closely with Clive, ideas for the monsters themselves. I am asked if I am available to be another monster (they are either short on extras or make-up...) – in fact, Ocean Software's Gary Bracey has already been roped in to play one of them during his research for the forthcoming computer game – but I decline and watch instead as Clive goes through the motions for another scene, before wrapping and sparing me some time over lunch for a chat.



His attitude is very clearly different to this film: he knows his financiers will be watching closely, and it is important that the film does good business both here and in the States. Recent box-office successes in the fantasy genre (including INDIANA JONES AND THE LAST CRUSADE, BATMAN (see my article last isue) and GHOSTBUSTERS II$ suggest that he hasn't too many worries. Two minutes of sheer bloodlust were cut from HELLRAISER II, and Clive seems subconsciously aware that his movie-making must mature, or at least change. "I've never thought it was that important to advance," he says, "but it is important to change, to do something different all the time."

Emphasis this time around is very much on characterisation, particularly of the four lead roles: Boone, his girlfriend Lori, Decker and the Sherriff. "It is scary, but its major scares come from genuinely caring about the pepole who are involved in that situation. I don't think the audience is gonna come out of this movie feeling detached about the characters, in the same way that they were detached from the HELLRAISER characters. HELLRAISER was a very cold picture: you couldn't really care for the characters." I ask him if working with David Cronenberg fed Clive's own vision of the movie, but he demurs. NIGHTBREED, he says is not Cronenberg's style. "His vision is much grimmer than anything in this picture,, and although this is a dark picture in some respects, it is dark in a completely different way to the way he is dark. But it was wonderful to have him in the picture, partly because he is a hero of mine and partly because it was his first chance to do this. It's a massive role, and I think it comes across on the screen."



The latest news on the movie is that another six weeks' of filming is to begin at Pinewood, with Ralph McQuarrie (who designed much of the alien fauna of the STAR WARS movies) overseeing the ranks of the NIGHTBREED. More monsters are lined up, although a rumoured three-hour rough-cut has yet to be edited down to a more manageable two hours' worth, and although scheduled for release at Christmas of this year, the UK release is now to be nearer next Summer. In the meantime, Barker addicts can read his new bestseller THE GREAT AND SECRET SHOW (the first of The Art trilogy) and look forward to the sequel to CABAL, which, Cive says, will probably be turned into the NIGHTBREED sequel. HELLRAISER II screenwriter Peter Atkins' script for HELLRAISER III has been accepted, and Clive is already looking at a screenplay for another of his stories, this time SON OF CELLULOID, which appeared in both the BOOKS OF BLOOD and my own magazine, SKELETON CREW.

For Clive Barker, obviously, darkness is not an obstacle, but big business, the tapping of which is clearly his Art.

NIGHTBREED – THE GAME

Clive Barker's new film **Nightbreed** is to be pixelised by film license supremos, Ocean Software. This can only be judged as another brilliant marketing move by the company responsible for the **Batman** movie game (another superb license deal).

The game is to follow the plot of the film very closely (as contacts have told us) of which Ocean is a world expert, due to the fact that its Public Relations manager was asked to make his screen debut as one of the **Nightbreed**.

Apparently, Clive Barker himself had a reasonable input into the game design, thus making it very accurate on the detail side. We have also been informed that it is to be more of an arcade game than anything else.

As already explained in the main feature (what do you mean you haven't read it yet?), the plot of the film involves a character named Boone, who has been wrongly adjudged to have murdered somebody. Thus he goes on the run.

Unfortunately he runs too far, into the city of Midian – a land full of various nasties; the **Nightbreed**. Here he starts to change himself, into one of the said creatures, and then it gets juicy.

Now that the movie has been rescheduled for an February release, the game has followed suit. It will be available on the Amiga and C64, and you can bet that it'll be every bit as horrific as its cellular counterpart.

Rik Henderson.

"Ocean software's Gary Bracey has already been roped in to play one of them (the Nightbreed)..."



128 CORNER

Put pen to paper and tell us your news, views and groans

Dear 128 Corner,
Congratulations on the new *C128 Corner*. The article is a great idea, I hope it is a success. Here are a few hints and tips for you.

For a secret message from your 128 enter: **SYS32800, 123, 45,6**

POKE4784, 9: POKE54785, 230 will increase the size of characters on 80 col. screen (may not work on all versions of 128).

1581 partitions can be accessed from *Fontmaster 128* by sending the disk command: **/:partition name.**

When using *Micro Clerk 128,* pop-up menus can be moved around the screen using the TAB key.

Graphics created on *CADPAK 128's* second screen can be used with *Fontmaster* by loading them into the convertor as a hi-res picture.

I hope that these will be of some use to you.

P. Traynor, Warrington, Cheshire.

Dear 128 Corner
I am looking forward to reading articles about the C128 in the new *128 Corner*. The following questions may be of interest to other readers, in addition to myself.

What *Viza* Software is available for the C128 for Word Processing, Database and Spreadsheets.

What officially does CP/M stand for. And what range of software can one used and is available.

Is is possible to switch from the C64 mode to the C128 mode and vice versa with a cartridge installed without damaging your computer.

I look forward to your reply in the pages of YC.

J. Bradley, Lanarkshire, Scotland.

Two Viza *products were launched for the C128. The first of these was* Viza Classic, *a very powerful wordprocessor and a favourite in the office. The second program is* Viza Star. *This program offers both database and spreadsheet functions, while not as pretty or friendly as* Viza Classic *it is still a very powerful program. Try* Financial Systems Software *if you are trying to track these down.*

CP/M *stands for Control Program for Microcomputers. Basically it was the fore runner to MOS/DOS and the version of* CP/M *found on may* IBM *compatibles. CP/M allowed programs written to be run on a variety of computers.*

There is a large amount of CP/M software available – mostly professional/business applications, unfortunately there is too much to list here.

If you want to investigate CP/M software further we suggest you take a look at the CP/M Kit and the CP/M Users guide. Both of these are available from Financial Systems Software.

You could also try contacting the CP/M Users Group *at: 72 Mill Road, Dartford DA2 7RZ.*

Most cartridges are designed for the Commodore 64 computer and will not allow you to access the C128 while they are plugged in, they will start up the computer in C64. The only cartridge that we are aware works in C128 mode is the Warp Speed *this, like just about everything else is available from* Financial Systems Software. *Switching between C64 and C128 mode while a cartridge is plugged in, if the cartridge allows it, will cause no problems.*

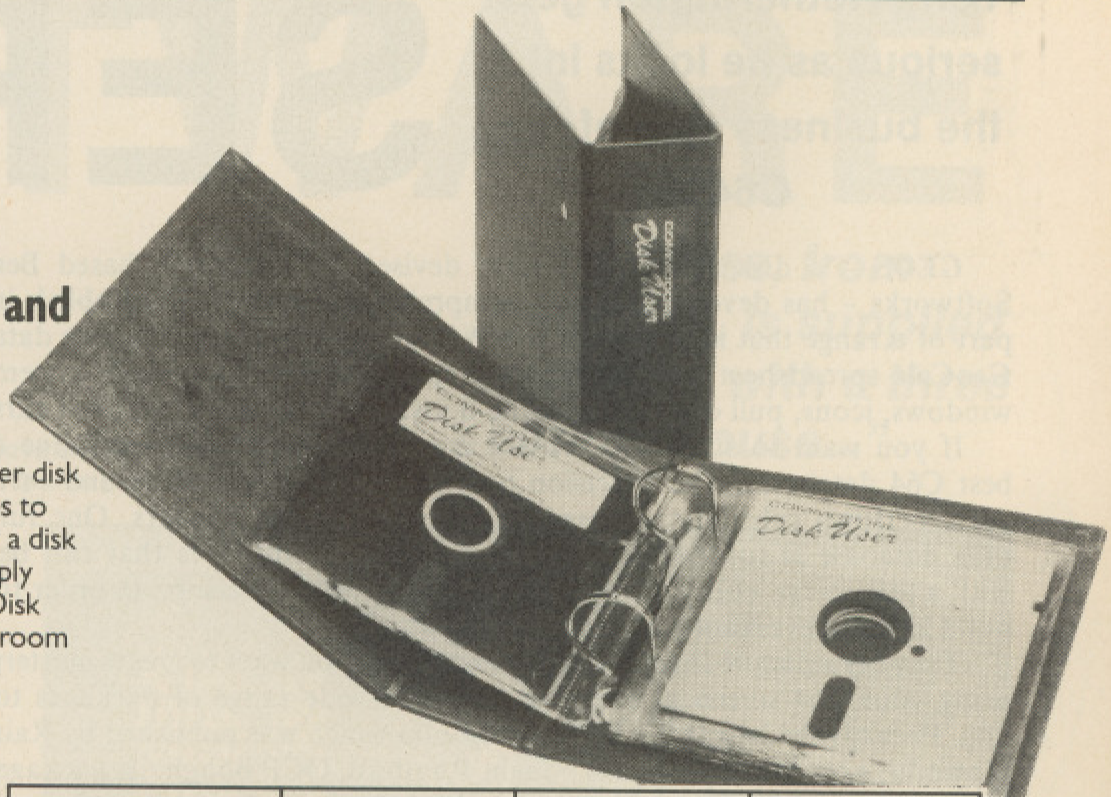
Dear 128 Corner
I like the C128 pages in YC. Could you mention in them that the C128 version of *Supersoft's World Style,* formerly called Word Perfect, has now been modified to correctly underline when used with Commodore's own daisywheel printer, DPS1101. I solved the problem for them, and they sent me a very nice gift in return. Word Style works in either 40 or 80 columns. It has two work areas, between which text can be transferred. An easy to use, very basic word processor, it's good value for £20. Anyone with C64 or Plus/4 *Word Perfect* files can load them straight in to *Word Style 128.*

P. Simmonds, Skelmanthorpe, Huddersfield

Thanks for you letter, and the free plug for yourself. Hope that your comments will prove beneficial to some users out there.

Binders

Organise and protect your disk with Commodore Disk User disk binders and data disks.



Why not keep your Commodore Disk User program collection alongside your magazines in a stylish Disk User disk binder? The binder comes complete with 10 disk sleeves to organise and protect your program disks. Why not buy a disk binder to house all of your data disks? We can even supply Commodore Disk User data disks. The Commodore Disk User logo immediately identifies your disks and there's room to title them and document the disks details.
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10 sleeves for insertion in binder, £1.50. Order code **BDS10**

20 sleeves for inclusion in binder, £2.75. Order code **BDS20**

10 Commodore Disk User data disks, £5.95. Order code **BDD10**

PRODUCT NAME	ORDER CODE	QUANTITY	PRICE
Overseas postage add £1.00			
		TOTAL	

All orders should be sent to: YOUR COMMODORE, READERS SERVICES, ARGUS SPECIALIST PUBLICATIONS, ARGUS HOUSE, BOUNDARY WAY, HEMEL HEMPSTEAD HP2 7ST. Please allow 28 days for delivery.

SERIOUS

Tony Hetherington gets serious as he looks into the business side of the C64

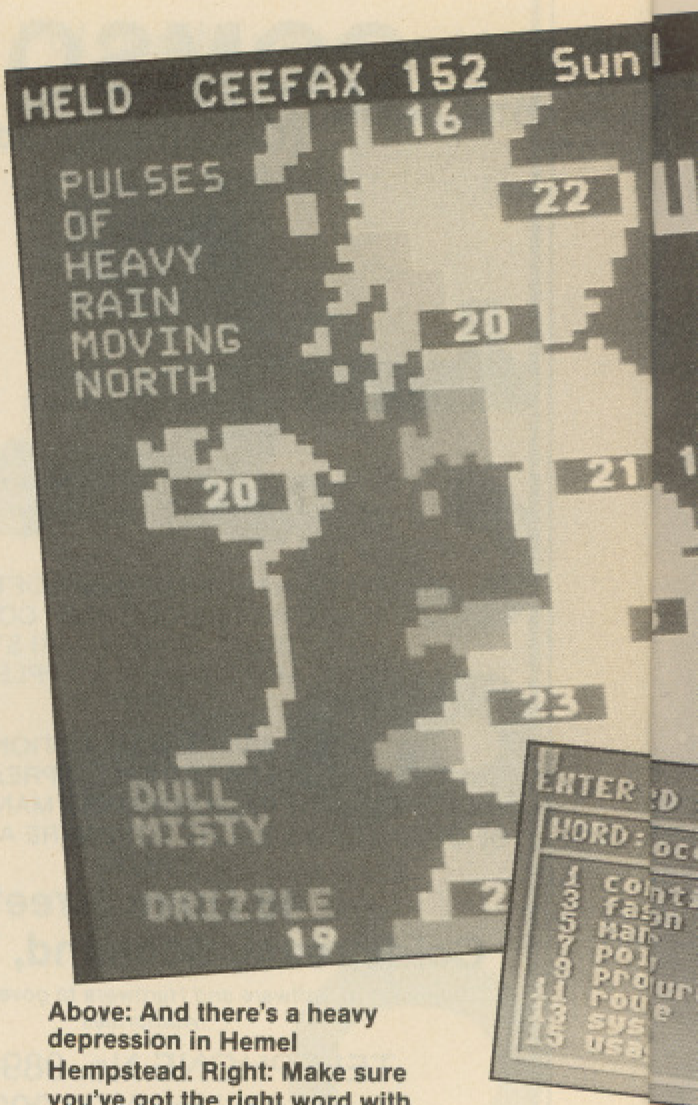
Regular readers of *Your Commodore* will know that there's more to C64 computing than blasting aliens and solving adventures. In the next few pages we'll explore exactly what your C64 can do and what hardware and software is available to help you. First we'll look at the Soft Options of the programs you can run and then at the Hard Facts, which is the extra hardware you'll need to buy to get the most out of Commodore computing.

Soft Options

Word processing utilities top most polls of computer applications and the C64 has its fair share. These range from the cheap and cheerful to the multi featured. At the top end of the scale **World Writer 3**, available through F.S.S.L., costs £39.95 but includes an 100,000 word spell-checker, a Thesaurus to ensure you always choose the right word and an outliner utility to plan your writing through a series of nested headings before you begin. The cheapest word processor is probably Logotron's **Writer 1295** that logically costs only £12.95 but includes a spell checker even though its operation is strange and slow. Before you buy a word processor think about what you're going to use it for as common uses range from letter writing to magazine articles (even books), and buy one suited to your needs.

Other word processors worth considering are **Super Script** and **PaperClip**.

If you're thinking of producing a club newsletter, or report including graphics and charts, then a DTP system will help considerably. For the C64 there-are-three-main contenders: **GeoPublish, PaperClip Publisher** and **Stop Press**. As with many packages each has its own strengths and weaknesses. **Stop Press**, from Database, is supplied complete with a three button mouse and is controlled by icons, but has a very limited selection of typestyles. **PaperClip Publisher** is very good but only supports the **PaperClip** word processor which reduces its value. Finally, **GeoPublish** is a little slow to use but, through a text grabber, you can incorporate text files from any word processor into your pages, and can also use any GEOS font and graphics from programs such as **Print Shop** and **Newsroom**.



Above: And there's a heavy depression in Hemel Hempstead. Right: Make sure you've got the right word with Word Writes.

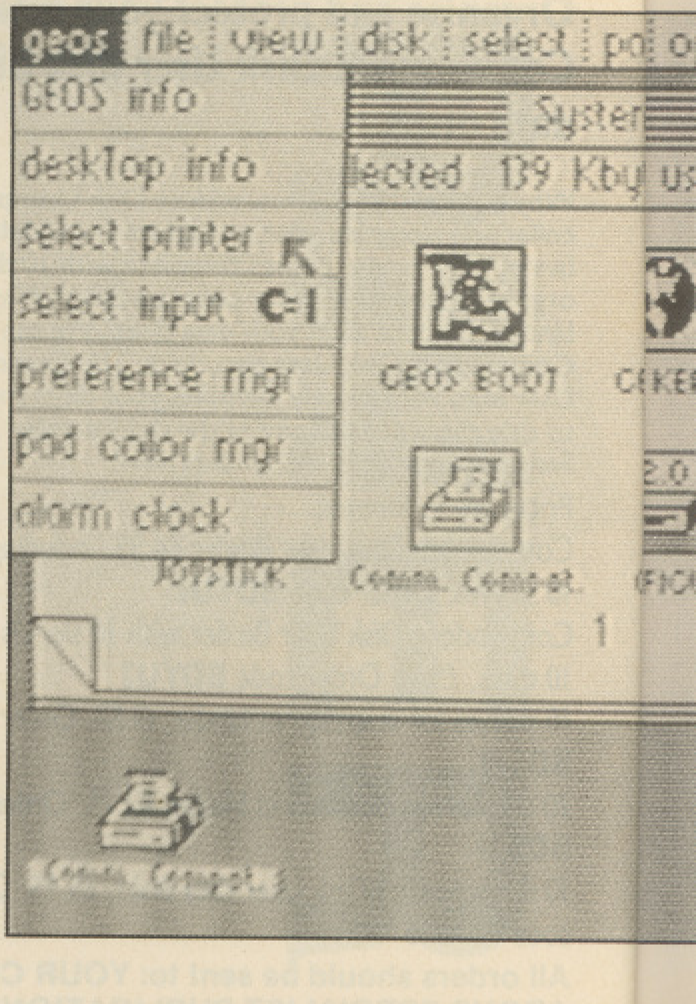
GEOS – a disk operating system devised by California based Berkeley Softworks – has developed into a comprehensive system; **GeoPublish** is only part of a range that includes the **GeoWrite** word processor, **GeoFile** database, **GeoCalc** spreadsheet and **GeoChart** graphing utility. The whole system uses windows, icons, pull down menus and a joystick or mouse controlled cursor.

If you want to store and retrieve data then **Superbase** is still one of the best C64 databzses. The Precision Software package can store and sort your data, perform calculations based on it and store the answers. One function of a database is to provide a list of names and addresses that can be used with a mailmerge utility, supplied with most word processors, in order to send out a letter to everyone on your mailing list.

They say a picture is worth 1000 words and if you want to create masterpieces using your C64 screen as a canvas thee is a wide range of packages to help you. Perhaps the best is the **OCP Art Studio** which was published by Rainbird. However, now Microprose has bought Rainbird, OCP bought its package back and then sold it to Datel Electronics. Luckily the program isn't as confusing and it now represents excellent value for money. The new Datel Art Studio offer bundles the package with a 1351 mouse, mouse mat and mouse holder for only £29.99.

With the addition of a modem, your C64 can become a gateway into the worlds of bulletin boards and online services, such as Compunet, that offers its users pages and pages of sample art, programs, and information at the press of a few keys and a BT phone socket.

Finally, you can add a teletext adapter to your C64 to view, store and read pages of information from Ceefax and Oracle services. These not only contain daily TV listings, weather and travel details, jokes and recipes but



also the latest news, sports results and stock market prices. This becomes particularly useful if you're planning on using programs such as pools predictors, as a utility is supplied to read the screen buffer and will allow you to use the information in your own programs.

Hard Facts

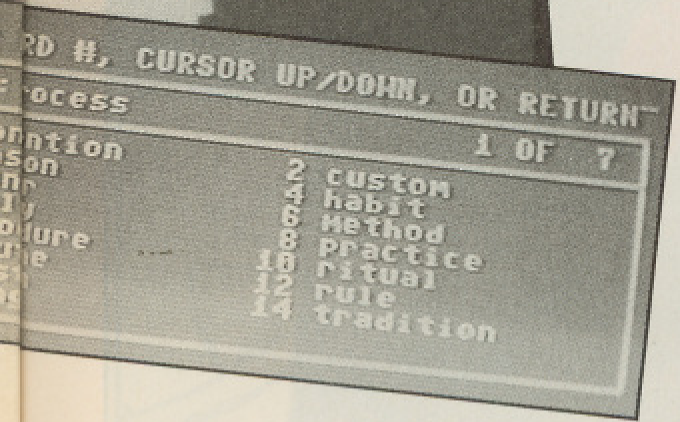
Disk drives
Unless you're a glutton for punishment, or you actually enjoy long loading times, you'll need to invest in a disk drive. There are a number on the market, including Commodore's own. One of the best buys is Evesham Micros **Oceanic** drive which is a slimline drive, is fully compatible with Commodore's and comes free with **GEOS**. Expect to pay about £150 for a drive but look out for special offers.

Printer
A good printer is essential if you want to get the most out of applications such as word processing and desktop publishing. These range from low cost **Epson, Star** and **Mannesman Tally** dot matrix printers to laser technology. The **Star LC-10 C** is particularly fun as it is not only a good black and white work horse it can also print out full colour images created by art packages.

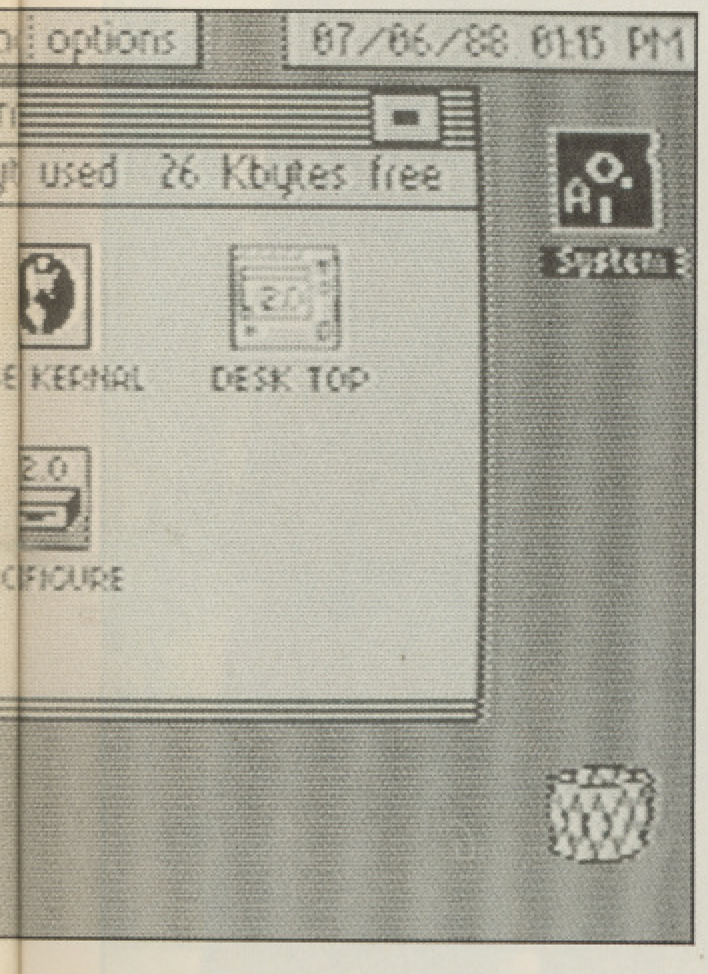
Graphics tablet
If you're really serious about C64 graphics and you've tried and dismissed joysticks and mice as electronic paintbrushes then why not invest in a graphics tablet. These are ideal for tracing in outlines of objects and pictures into a package and also make working with fine detail a lot easier. If you want the best then lookout for the **Koala Pad** as it's supported by most art packages.

Teletext Adapter
Microtext prodcue a very reasonable teletext adapter that can either use a video recorder or tuner (supplied extra) and plugs into the C64's user prot. It has a cable that connects to the video out socket of the video recorder and can even be in a different room.



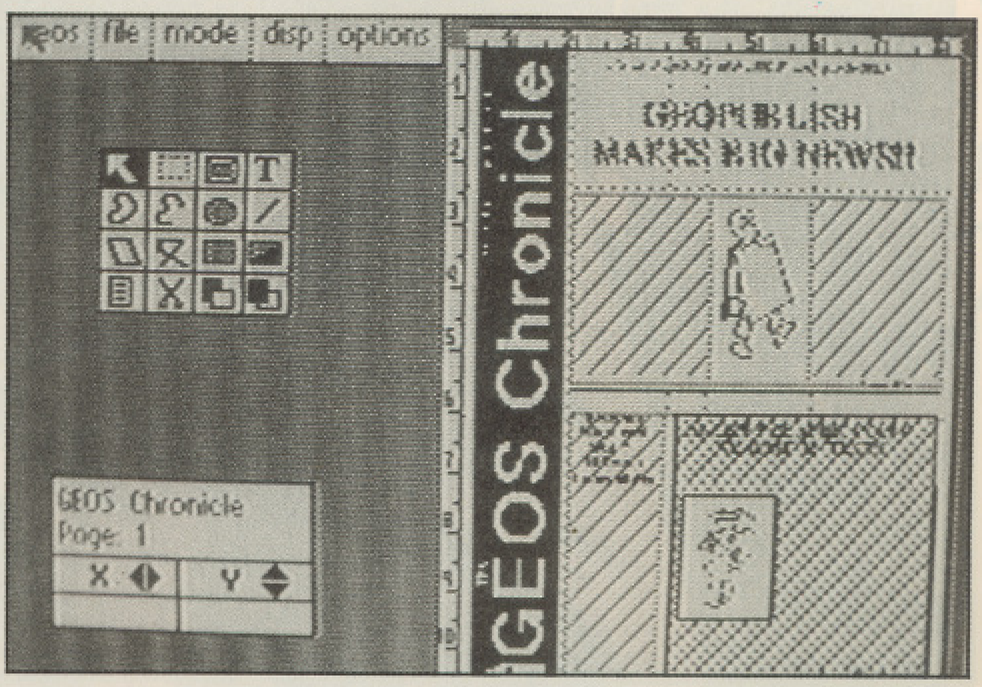


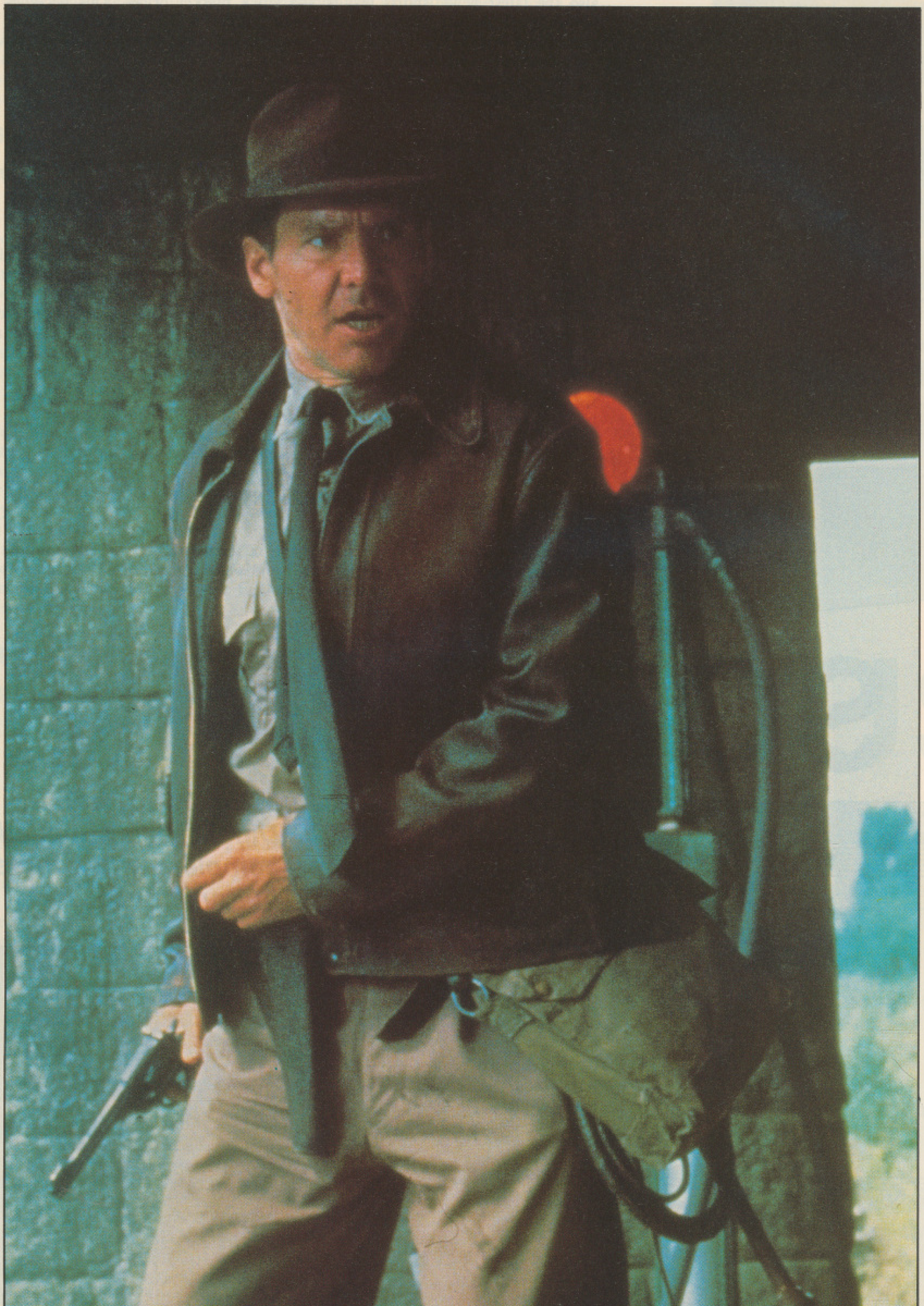
S SOFTWARE



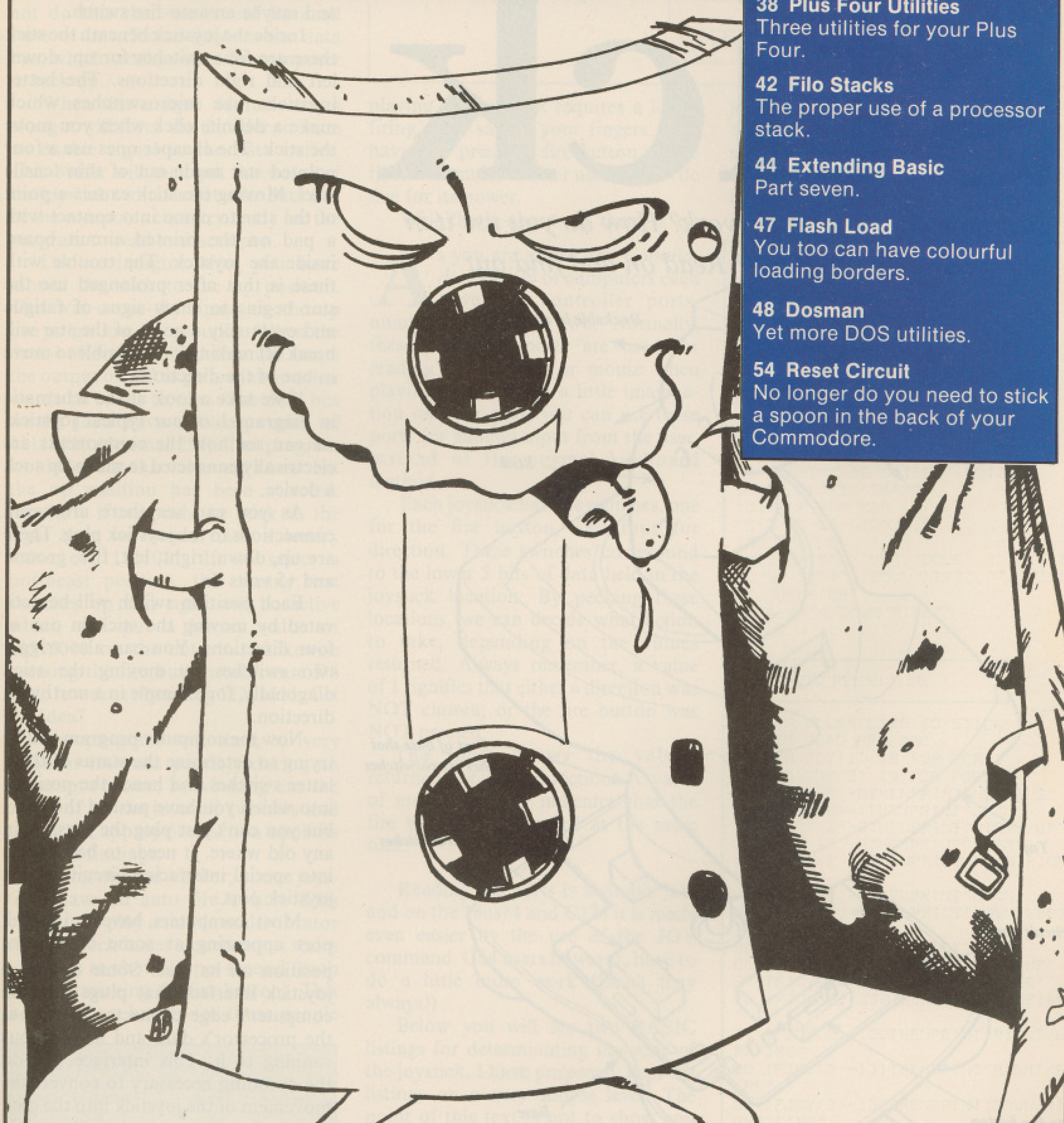
"Stop Press, from Database, is supplied complete with a three button mouse..."

Above and left: GEOS, a system for every use.





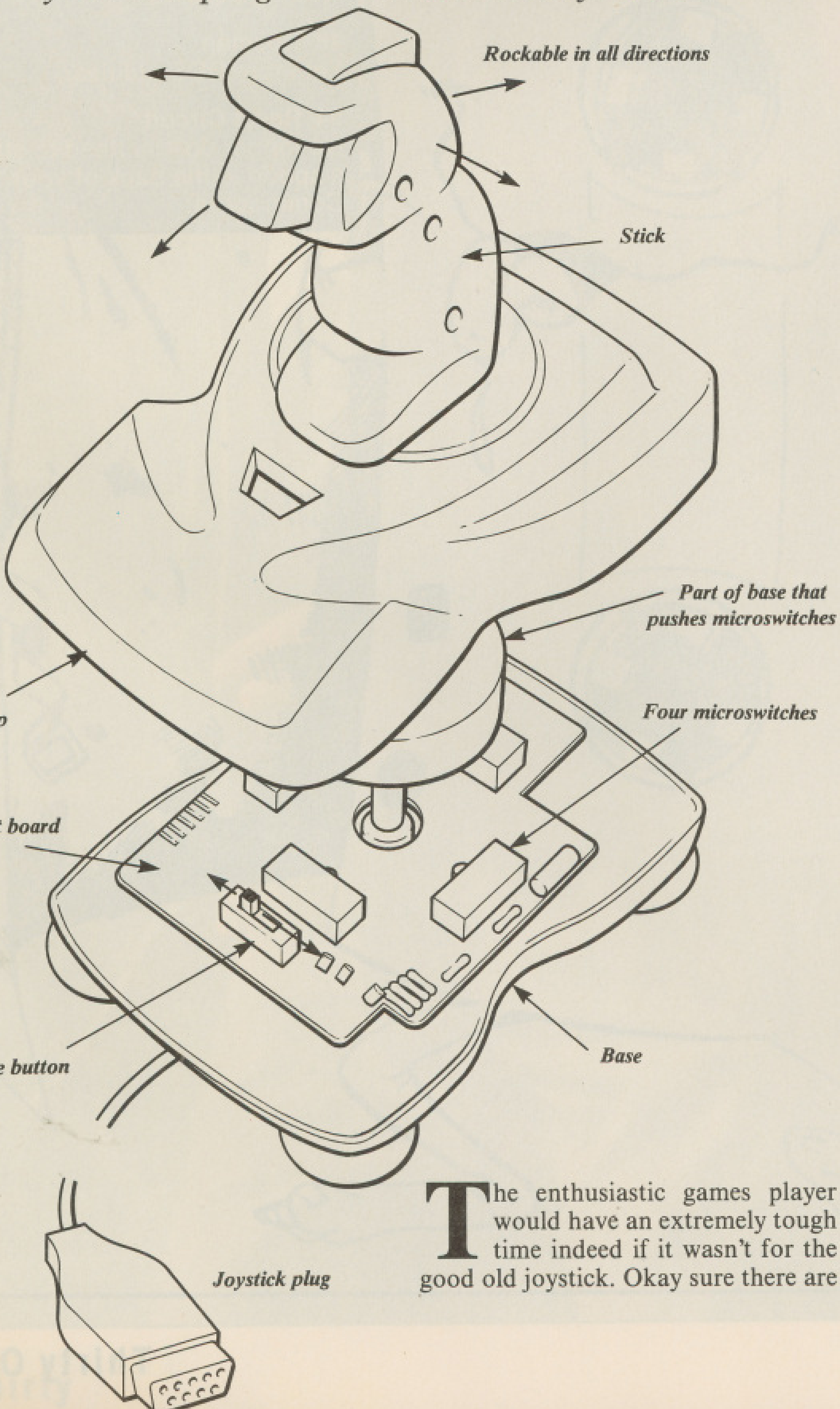
YOUR PROGRAMMER



CONTENTS

Give it some stick

Just how does a joystick work? How do you use it in your own programs? Read on and find out



The enthusiastic games player would have an extremely tough time indeed if it wasn't for the good old joystick. Okay sure there are games that do not require control from such a device, but, for the shoot-em-up game there is just no substitute. But how do they work?

We all know what a joystick looks like: basically it will have a stick with a fire button or buttons, a base, a lead and maybe an auto-fire switch.

Inside the joystick beneath the stick there are four switches for up, down, left and right directions. The better joysticks use microswitches which make a definite click when you move the stick. The cheaper ones use a four pointed star made out of thin tensile steel. Moving the stick causes a point of the star to come into contact with a pad on the printed circuit board inside the joystick. The trouble with these is that after prolonged use the star begins to show signs of fatigue and eventually a point of the star will break off making it impossible to move in one of the directions.

If we take a look at the schematic in diagram 1 of our typical joystick, we can see how the components are electrically connected to make up such a device.

As you can see there are seven connections to the joystick plug. These are up, down, right, left, fire, ground and +5 volts dc.

Each position switch will be activated by moving the stick in one of four directions. You can also trigger two switches by moving the stick diagonally, for example in a northwest direction.

Now the computer program will be trying to determine the status of these latter switches and hence the position into which you have pushed the stick, but you can't just plug the joystick in any old where. It needs to be plugged into special interfacing circuitry via a joystick port.

Most computers have a joystick port appearing at some convenient position on its case. Some require a joystick interface that plugs into the computer's edge connector which has the processor's data and address bus running to it. This interface will do the decoding necessary to convert the movement of the joystick into the data signals that the program will need in order to work out which position the joystick is in. If the joystick port is built in to the computer, then it will have such an interface already inside it.

The interface or circuitry inside the computer will look something like

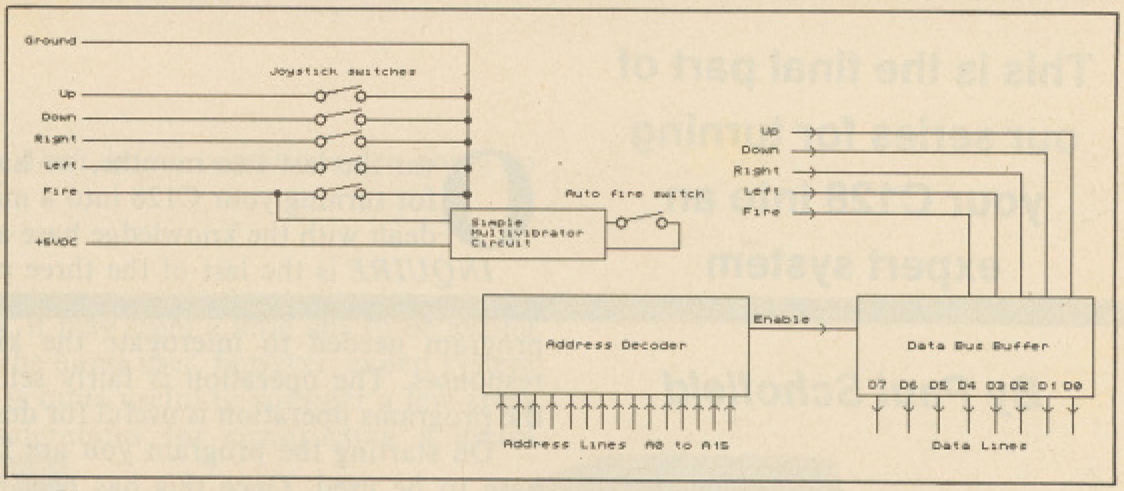


diagram 2. We have the address decoding chip and a data bus buffer. The address decoder is needed to read the status of the switches in the joystick at specific times, that is, when a specific unique address exists on the address bus and at no other time. If we did not do this then we would have all sorts of unwelcome data on the data bus, which would cause the computer to lock up.

When this unique address comes along it will force the decoder to issue an enable signal to the data buffer. This buffer will then put the status of the joystick switches onto the data bus of the computer circuitry ready for the program to read and act upon.

Let us imagine that you have moved the stick to the up position. This will cause the signal on the up line to go low (to ground). When the data buffer is enabled this will cause the output on D0 to go low, or in other words to be set to zero. The data bus would then have a binary value of 11111110 (decimal 254). The program would look at this value and know that the up position has been selected. Similarly if we push the stick to the right then we would have a binary value of 11111011. If we select a northeast position, this means that switches up and right will be active which will put a binary value of 11111010 on the data bus. Likewise pressing the fire button will cause D4 to go low thus obtaining 11101111. Get the idea?

The program will then, at very frequent intervals possibly during an interrupt routine, be working out the status of all the joystick switches and taking the appropriate action upon its data bus findings.

As mentioned earlier, some joysticks have an auto fire switch. This brings in to play a simple multivibrator circuit which issues a continuous series of pulses at about 10 per second (each pulse mimicking the fire button). This is basically a luxury for those people playing a game that requires a lot of firing, thus saving your fingers from having to press the fire button all the time. The multivibrator uses the +5Vdc line for its power.

Well that's about all there is on joysticks. Once you've seen one you've basically seen them all, except that some are designed better for prolonged use and comfort and some are designed better for fast action. It really is a personal choice, so try before you buy.

Plus 4 and C128		C64	
Value	**Direction**	**Value**	**Direction**
0	None	0	None
1	Up	1	Up
2	Up/Right	2	Down
3	Right	3	-
4	Down/Right	4	Left
5	Down	5	Up/Left
6	Down/Left	6	Down/Left
7	Left	7	-
8	Up/Left	8	Right
		9	Up/Right
		10	Down/Right

As you are aware, the *Commodore* family of computers each have two controller ports, numbered one and two. Normally, these controller ports are used for reading the joystick or mouse when playing games. With a little imagination on your part, you can use these ports for gaining input from the user, instead of the normal keyboard method.

Each joystick has five switches, one for the fire button, and four for direction. These switches correspond to the lower 5 bits of data held in the joystick location. By peeking these locations, we can decide what action to take, depending on the values returned. Always remember, a value of 1 signifies that either a direction was NOT chosen, or the fire button was NOT pressed.

The table shows the values returned for each direction. A value of more than 128 indicates that the fire button was pressed at the same time.

Reading the ports is a simple job, and on the Plus/4 and C128 it is made even easier by the use of the **JOY** command. C64 users however, have to do a little more work (Don't they always!)

Below you will see two BASIC listings for determinating the state of the joystick. I have purposely kept the listings on a very simple level. The point of this text is not to show you programming skills or techniques, it is simply to show you how to read joystick information.

The first listing can be used by both Plus/4 and C128 users. The second is for C64 users.

JOYSICK 64

```
10 REM C64 VERSION
15 REM OF JOYSTICK
20 REM READ PROGRAM
25 FORD=0TO10
30 READDI$(D):NEXT
40 GOSUB1000
45 IFDI$(JO)=""THEN55
50 PRINTDI$(JO);" "
55 IFFB=16THEN40
60 PRINT"FIRE BUTTON":GOTO40
1000 JO=PEEK(56320)
1010 FB=JOAND16
1015 JO=15-(JOAND15)
1020 RETURN
1030 DATA"","UP","DOWN","","LEFT
","UP/LEFT","DOWN/LEFT","","RIGH
T","UP/RIGHT"
1035 DATA"DOWN/RIGHT"
```

JOYSTICK PLUS4/128

```
10 REM PLUS4/C128 JOYSTICK
15 REM READ PROGRAM
20 REM JOY(1) IS FOR PORT1
25 REM JOY(2) IS FOR PORT2
27 IFJOY(2)=0THENPRINT"NOTHING"
30 IFJOY(2)=1THENPRINT"UP"
35 IFJOY(2)=2THENPRINT"RIGHT/UP"
40 IFJOY(2)=3THENPRINT"RIGHT"
45 IFJOY(2)=4THENPRINT"DOWN/RIGH
T"
50 IFJOY(2)=5THENPRINT"DOWN"
55 IFJOY(2)=6THENPRINT"DOWN/LEFT
"
60 IFJOY(2)=7THENPRINT"LEFT"
65 IFJOY(2)=8THENPRINT"LEFT/UP"
67 IFJOY(2)=128THENPRINT"FIRE"
70 IFJOY(2)=129THENPRINT"UP/FIRE
"
75 IFJOY(2)=130THENPRINT"RIGHT/U
P/FIRE"
80 IFJOY(2)=131THENPRINT"RIGHT/F
IRE"
85 IFJOY(2)=132THENPRINT"DOWN/RI
GHT/FIRE"
90 IFJOY(2)=133THENPRINT"DOWN/FI
RE"
95 IFJOY(2)=134THENPRINT"DOWN/LE
FT/FIRE"
100 IFJOY(2)=135THENPRINT"LEFT/F
IRE"
105 IFJOY(2)=136THENPRINT"LEFT/U
P/FIRE"
110 GOTO27
```

This is the final part of our series for turning your C128 into an expert system

By Paul Schofield

Over the last two months, we have been providing you with the means for turning your C128 into a mini expert system. The first two sections dealt with the knowledge base and language generator.

INQUIRE is the last of the three programs making up our expert system shell. Once your expert system has been fully tested, *INQUIRE* is the only program needed to interogate the knowledge base and evaluate the user responses. The operation is fairly self explanatory, but some knowledge of the programs operation is useful for designing and tuning your applications.

On starting the program you are first required to identify the knowledge base to be used. Once this has been done the target texts, condition texts, relation rules and implication rules are loaded into a set of arrays. The master array is the relation rules array, which defines the operations to be performed and includes the necessary references for extracting information from the other data structures.

Before questioning the user, the program first displays any help texts defined in the knowledge base giving background information on the topic of the knowledge base etc. If this is longer than a single page, it is displayed a page at a time and the user indicates when then next page is to be displayed.

After this a standard help text on answering questions is displayed. For each condition, it is permissible to answer (t)rue, (f)alse or (d)on't know.

The program then examines the relation rules array-starting at the entry for target 1. It scans each condition for the target and unless the condition is irrelevant for this rule, the user is asked to answer the condition question. The answer is saved and evaluated to determine whether it is the required result for the target. If it is, the program continues with this target, otherwise it marks the reason for abandoning the target and continues with the next target. There are two reasons why a target may be abandoned, either it is rejected, because a part of a condition has the wrong value or it is simply abandoned because of a don't know response. It is important to note that a don't know does not rule out a target, it is simply ignored during the first part, as there is maybe a solution that does not depend on the result of the particular condition.

After each condition is entered a further check is performed to see if any other conditions are implied by this result and the appropriate results for these conditions set. This means that as the inference engine proceeds through the scan of targets and conditions, it finds it already has the answers to an increasingly large number of conditions and so does not have to ask the user.

Hopefully, if Don't Know answers have not been given, a relation rule for a target will be satisfied. At this stage a subroutine is called, which displays the possible solution and gives the user the option to exit from the program or continue searching for further solutions. A further option – (W)hy, is also provided.

Why?

The why option allows you to request a justification for the solution. What it does is back track through the targets and significant conditions processed to date and explain the actions it took. This is extremely useful for debugging a knowledge base and is also useful to the end user who wishes to examine the reasoning used to reach the solution. Where the expert system is used for categorizing and a new category has to be introduced this can give a useful clue to the new condition required and which targets are affected.

No (More) Solutions

Alternatively, a More response after a solution or a number of Don't Know response can cause the inference engine to exhaust the list of targets. At this stage the user is informed that no or no more solutions could be found. The option to try again is given if any don't know answers were given. This causes a complete reassessment of the data to be performed. This time the don't know response only affects the current rule, so that if the same unknown condition exists in several rules and no clear answer is given it will be asked repeatedly. This means that the retry is very tedious and there is no point

in requesting this unless at least some don't know conditions are going to be answered.

Applications

Having already typed in three programs, it may seem a little late to be asking what use is our expert system shell. For the home user, however, expert system applications are far from obvious, so it is quite useful to consider a few areas of potential use and also some considerations for constructing a useful knowledge base.

One very obvious application for the home computer user is a program design aid, indeed I originally developed the forerunner of the reason program to assist in developing my Cribbage Master program. Good cribbage players, who have used-the program will no doubt have noticed a slight flaw in the pegging strategy with certain types of hand. This is a result of posing the question 'what card maximises the scoring possibilities?'. A more correct approach would have been to ask 'which is the least disadvantageous card to play?' In most cases the answer is the same and once the algorithms were coded and problem noticed, it would have required a major rewrite to correct a minor short coming.

Presenting the strategy in RAL format is very much simpler and quickly highlights oversights.

General categorisation applications are also easily handled, as are guides to procedures, such as an extended version of the chemical analysis example or the enevitable car maintenance. Some care is required in the latter of these uses as the order of both the targets and conditions can be quite critical to the usefulness of the system produced. The reason program can be quite helpful in sorting out some of these problems. In some specialised applications, it could prove to be a problem, that both targets and conditions have to be expressed in terms of text strings. A typical example is a solution, that is built up as a result of several rules being true. This tends to be a problem of many general purpose expert system shells, as what is really required is for a satisfied rule to trigger an action, which contributes to the general solution. This is, however, a disadvantage, if a single unique solution is sought. Such applications can, however, be handled by planning for multiple solutions and noting each target solution found and always continuing to look for further solutions.

One final application area that should be mentioned is education. The question and answer technique is quite a good way of illustrating to children how to approach various types of problem.

Figure 4 illustrates a simple knowledge base for identifying mathematical shapes. This also demonstrates how to use implies to reduce the numbers of questions asked and also shows how multiple solutions can be useful. In this case looking for additional solutions will demonstrate, that a square is also a rhombus, a rectangle and a parallelogram.

Is our expert system shell intelligent?

It is still a subject of great debate as to what constitutes Artificial Intelligence. Some would argue that all programs are intelligent, whilst others would claim that to qualify, a program must mimic human intelligence. It is primarily the function of an expert system shell to provide a sensible strategy for evaluating the rules of the users system. It's the presentation of the rules by the user, that will determine how intelligently the particular system will respond. With *INQUIRE* I have deliberately left as much control as possible to be convenient for the applictions in which I use it. This means that the order in which both targets and conditions are defined is critical to the performance of the finished system. In most applications, however, it is only the order in which the targets are examined, that is of any concern to the user and it would be preferable if the conditions where examined in the most efficient order. In other words the inference engine includes the intelligence to decide the best order to evaluate the conditions. One such strategy can easily be incorporated within *INQUIRE.*

After displaying the help texts, call a subroutine, which scans the relations

array r% by condition number and computes counts of the number of targets affected by each condition. These counts are then sorted to produce an array p%, such that p%(1) is the number of the most used condition and p%(cn) is the least used condition. The following changes are then needed in the main program:

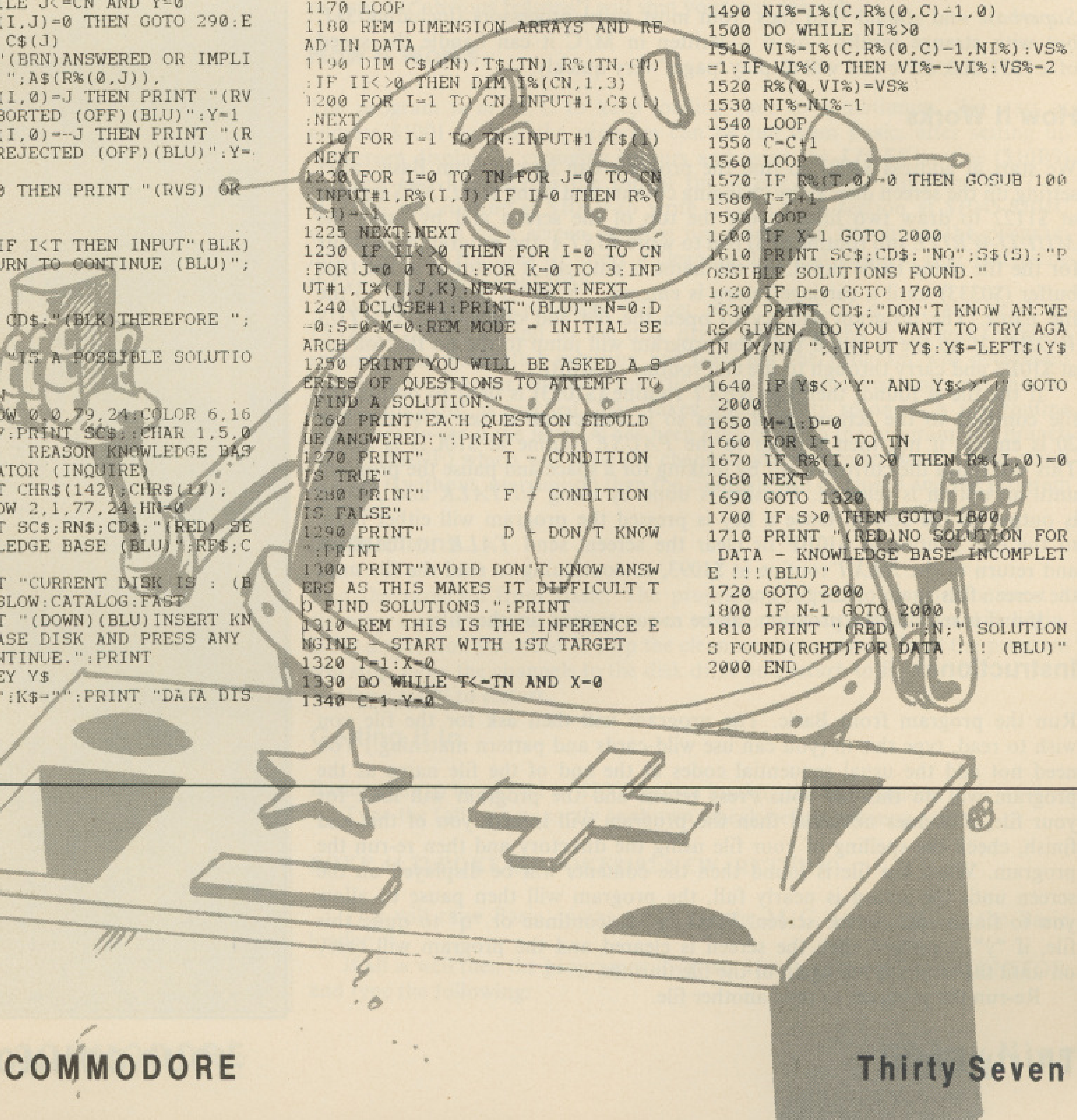
```
1340 p=1: y=0
1350 do while p   =cn and y=0
1355 c=p%(p)
1550 p=p+1
```

The only slight complication with doing this is that in computing the counts, implied conditions should also be taken into account. Otherwise it is possible that the revised evaluation strategy may prove less efficient than the original one, and that's not intelligent.

```
HELP 8
* POLYGONS KNOWLEDGE BASE                  *
* IDENTIFIES SIMPLE POLYGONS FROM A        *
* DESCRIPTION OF THEIR CHARACTERISTICS *
END HELP

TARGETS 20
1 AN EQUILATERAL TRIANGLE
2 AN ISOSCELES TRIANGLE
3 A TRIANGLE
4 A SQUARE
5 A RHOMBUS
6 A RECTANGLE
7 A PARALLELOGRAM
8 A TRAPESIUM
9 A QUADRILATERAL
10 A REGULAR PENTAGON
11 A PENTAGON
12 A REGULAR HEXAGON
13 A HEXAGON
14 A REGULAR HEPTAGON
15 A HEPTAGON
16 A REGULAR OCTAGON
17 AN OCTAGON
18 SORRY - I DON'T KNOW THE NAMES OF
POLYGONS WITH MORE THAN 8 SIDES.
19 SORRY - THE SHAPE IS NOT A POLYGON.
END TARGETS
;
CONDITIONS 20
1 THE SHAPE HAS ONLY STRAIGHT SIDES
2 THE SHAPE HAS MORE THAN 5 SIDES
3 THE SHAPE HAS 3 SIDES
4 THE SHAPE HAS 4 SIDES
5 THE SHAPE HAS 5 SIDES
6 THE SHAPE HAS MORE THAN 8 SIDES
7 THE SHAPE HAS 6 SIDES
8 THE SHAPE HAS 7 SIDES
9 THE SHAPE HAS 8 SIDES
10 THE SIDES ARE ALL THE SAME LENGTH
11 TWO SIDES ARE THE SAME LENGTH
12 ALL ANGLES ARE RIGHT ANGLES (90
DEGREES)
13 THE OPPOSITE SIDES ARE ALL PARALLEL
14 TWO SIDES ARE PARALLEL
END CONDITIONS
;
RELATIONS
1 + 1 3 10
1 - 2
2 + 1 3 11
2 - 2
3 + 1 3
3 - 2
4 + 1 4 10 12
4 - 2
5 + 1 4 10 13
5 - 2
6 + 1 4 12
6 - 2
7 + 1 4 13
7 - 2
8 + 1 4 14
8 - 2
9 + 1 4
9 - 2
10 + 1 5 10
10 - 2
11 + 1 5
11 - 2
12 + 1 2 7 10
12 - 6
13 + 1 2 7
13 - 6
14 + 1 2 8 10
14 - 6
15 + 1 2 8
15 - 6
16 + 1 2 9 10
16 - 6
17 + 1 2 9
17 - 6
18 + 1 2 6
19 - 1
END RELATIONS
;
IMPLIES
+2 > -3 -4 -5
-2 > -6
+3 > -4 -5
+4 > -5
+6 > -7 -8 -9
+7 > -8 -9
+8 > -9
+10 > +11
+12 > +13 +14
+13 > +14
END IMPLIES
```

```
10 FAST:DIM S$(1),A$(2)
20 SC$=CHR$(147):RN$="(RVS)":RF$
="(OFF)":CD$=CHR$(17):II=0:S$(0)
=" ":S$(1)=" MORE ":A$(0)="DON'T
 KNOW":A$(1)="TRUE          ":A$(2
)="FALSE       "
30 GOTO 1000
100 N=N+1:PRINT:PRINT"A POSSIBLE
 SOLUTION IS,":PRINT
110 PRINT T$(T):PRINT:S=1
120 PRINT "(RVS)(BLK)C(OFF)(BLU)
ONTINUE, (RVS)(BLK)W(OFF)(BLU)HY
 OR (RVS)(BLK)E(OFF)(BLU)XIT";:I
NPUT L$:L$=LEFT$(L$,1):PRINT
130 IF L$="W" OR L$="O" THEN GOS
UB 200:PRINT:GOTO 120
140 IF L$="E" OR L$="¯" THEN X=1
150 RETURN
200 FOR I = 1 TO T
210 PRINT CD$;"(BRN)TRIED (BLU)"
;RN$;T$(I);RF$:PRINT"(BRN)CHECKE
D:(BLU)"
220 J=1:Y=0
230 DO WHILE J<=CN AND Y=0
240 IF R%(I,J)=0 THEN GOTO 290:E
LSE PRINT C$(J)
250 PRINT"(BRN)ANSWERED OR IMPLI
ED(BLU) - ";A$(R%(0,J)),
260 IF R%(I,0)=J THEN PRINT "(RV
S)(RED) ABORTED (OFF)(BLU)":Y=1
270 IF R%(I,0)=-J THEN PRINT "(R
VS)(BLK) REJECTED (OFF)(BLU)":Y=
1
280 IF Y=0 THEN PRINT "(RVS) OK
(OFF)"
290 J=J+1
300 LOOP:IF I<T THEN INPUT"(BLK)
PRESS RETURN TO CONTINUE (BLU)";
L$
310 NEXT
320 PRINT CD$;"(BLK)THEREFORE ";
T$(T)
330 PRINT "IS A POSSIBLE SOLUTIO
N.(BLU)"
340 RETURN
1000 WINDOW 0,0,79,24:COLOR 6,16
:COLOR 5,7:PRINT SC$;:CHAR 1,5,0
,"          REASON KNOWLEDGE BAS
E INTEROGATOR (INQUIRE)
 ",1:PRINT CHR$(142);CHR$(11);
1010 WINDOW 2,1,77,24:HN=0
1020 PRINT SC$;RN$;CD$;"(RED) SE
LECT KNOWLEDGE BASE (BLU)";RF$;C
D$
1030 PRINT "CURRENT DISK IS : (B
LK)";CD$:SLOW:CATALOG:FAST
1040 PRINT "(DOWN)(BLU)INSERT KN
OWLEDGE BASE DISK AND PRESS ANY
KEY TO CONTINUE.":PRINT
1050 GETKEY Y$
1060 F$="":K$="":PRINT "DATA DIS
K DIRECTORY : (BLK)":PRINT:SLOW:
CATALOG:FAST:PRINT"(BLU)":INPUT"
NAME OF KNOWLEDGE BASE FILE [12
CHARS MAX] ";F$
1070 IF LEN(F$)>12 THEN F$=LEFT$
(F$,12)
1080 F$=F$+".RKB"
1090 SLOW:DOPEN#1,""+F$,D0,U8,R:
IF DS<>0 THEN PRINT"(DOWN)(RED)"
;DS$;" (RVS) PROGRAM ABORTED. (O
FF)(BLU)":DCLOSE#1:END
1100 INPUT#1,HN:INPUT#1,CN:INPUT
#1,TN:INPUT#1,II:FAST
1110 PRINT SC$;CD$;"(BLK)";
1120 REM DISPLAY HELP INFORMATIO
N
1130 DO WHILE HN>0
1140 DD=0:IF HN>16 THEN I=16:DD=
1:HN=HN-16:ELSE I=HN:HN=0
1150 FOR J=1 TO I:INPUT#1,H$:PRI
NT H$:NEXT
1160 IF DD=1 THEN PRINT CD$;"PRE
SS ANY KEY FOR MORE.";:GETKEY Y$
1170 LOOP
1180 REM DIMENSION ARRAYS AND RE
AD IN DATA
1190 DIM C$(CN),T$(TN),R%(TN,CN)
:IF II<>0 THEN DIM I%(CN,1,3)
1200 FOR I=1 TO CN:INPUT#1,C$(I)
:NEXT
1210 FOR I=1 TO TN:INPUT#1,T$(I)
:NEXT
1220 FOR I=0 TO TN:FOR J=0 TO CN
:INPUT#1,R%(I,J):IF I=0 THEN R%(
I,J)=-1
1225 NEXT:NEXT
1230 IF II<>0 THEN FOR I=0 TO CN
:FOR J=0 0 TO 1:FOR K=0 TO 3:INP
UT#1,I%(I,J,K):NEXT:NEXT:NEXT
1240 DCLOSE#1:PRINT"(BLU)":N=0:D
=0:S=0:M=0:REM MODE - INITIAL SE
ARCH
1250 PRINT"YOU WILL BE ASKED A S
ERIES OF QUESTIONS TO ATTEMPT TO
 FIND A SOLUTION."
1260 PRINT"EACH QUESTION SHOULD
BE ANSWERED:":PRINT
1270 PRINT"          T - CONDITION
IS TRUE"
1280 PRINT"          F - CONDITION
IS FALSE"
1290 PRINT"          D - DON'T KNOW
":PRINT
1300 PRINT"AVOID DON'T KNOW ANSW
ERS AS THIS MAKES IT DIFFICULT T
O FIND SOLUTIONS.":PRINT
1310 REM THIS IS THE INFERENCE E
NGINE - START WITH 1ST TARGET
1320 T=1:X=0
1330 DO WHILE T<=TN AND X=0
1340 C=1:Y=0
1350 DO WHILE C<=CN AND Y=0
1360 IF R%(T,C)=0 GOTO 1550
1370 IF R%(0,C)>0 GOTO 1440
1380 IF M=0 AND R%(0,C)=0 THEN Y
=1:R%(T,0)=C:GOTO 1560
1390 PRINT"(BLK)";C$(C);" (BLU)[
T/F/D] ";:INPUT L$:L$=LEFT$(L$,1
)
1400 IF L$="T" OR L$="|" THEN R%
(0,C)=1:GOTO 1440
1410 IF L$="F" OR L$="—" THEN R%
(0,C)=2:GOTO 1440
1420 IF L$="D" OR L$="¯" THEN R%
(0,C)=0:D=1:Y=1:R%(T,0)=C:GOTO 1
560
1430 GOTO 1390
1440 IF R%(T,C)<0 GOTO 1470
1450 IF R%(0,C)=2 THEN Y=1:R%(T,
0)=-C:GOTO 1480
1460 GOTO 1480
1470 IF R%(0,C)=1 THEN Y=1:R%(T,
0)=-C
1480 IF II=0 GOTO 1550
1490 NI%=I%(C,R%(0,C)-1,0)
1500 DO WHILE NI%>0
1510 VI%=I%(C,R%(0,C)-1,NI%):VS%
=1:IF VI%<0 THEN VI%=-VI%:VS%=2
1520 R%(0,VI%)=VS%
1530 NI%=NI%-1
1540 LOOP
1550 C=C+1
1560 LOOP
1570 IF R%(T,0)=0 THEN GOSUB 100
1580 T=T+1
1590 LOOP
1600 IF X=1 GOTO 2000
1610 PRINT SC$;CD$;"NO";S$(S);"P
OSSIBLE SOLUTIONS FOUND."
1620 IF D=0 GOTO 1700
1630 PRINT CD$;"DON'T KNOW ANSWE
RS GIVEN, DO YOU WANT TO TRY AGA
IN [Y/N] ";:INPUT Y$:Y$=LEFT$(Y$
,1)
1640 IF Y$<>"Y" AND Y$<>"|" GOTO
 2000
1650 M=1:D=0
1660 FOR I=1 TO TN
1670 IF R%(I,0)>0 THEN R%(I,0)=0
1680 NEXT
1690 GOTO 1320
1700 IF S>0 THEN GOTO 1800
1710 PRINT "(RED)NO SOLUTION FOR
 DATA - KNOWLEDGE BASE INCOMPLET
E !!!(BLU)"
1720 GOTO 2000
1800 IF N=1 GOTO 2000
1810 PRINT "(RED) ";N;" SOLUTION
S FOUND(RGHT)FOR DATA !!! (BLU)"
2000 END
```



Plus/4 Utilities

We present three basic but very useful utilities for the Plus/4 and C16.

By D. Glass

One thing that every Plus/4 owner knows, is that we are constantly being ignored by software companies and magazines. Between them, these pillars of the computer industry, are trying to squeeze us out, just as they did with poor old VIC20 users. But, thanks to magazines like *Your Commodore*, we shall overcome. I have decided to present you with 3 simple, but nevertheless, useful routines for our humble machine. The routines are *Seqread, 1551 head clean* and *1551 device.*

Seqread

This handy little routine is particularly useful to those without **Script/Plus**. The routine will read sequential ASCII files made by *Script/Plus, Super Script, Superbase* and should read files from most word processors (including *3+1*, but with strange results.) As it is written in M/C it can handle the speed of a 1551 disk drive and will display 'pages' very quickly.

How It Works

We start at address $1001 so that the program can be run from Basic, after setting up the screen display by changing colours and using the *LINES* routine at $1122 to draw two lines across the top of the screen and by using the *MULTI-WRITE* sub routine at $110B to write *LISTA*, the program now waits for the file name to be input. As the name is entered, it is stored in the tape buffer ($0333) until a carriage return is entered. ",S,R," is then added to the file name. The program will try to open the file and checks the *STATUS WORD*. If no file is found then the program will jump to the no file routine at $10B8 and carry through to the end routine at $10BF.

If the file is found, then the *NEXT* routine ($1093) is used to output the file contents to the screen, as it does so it will check to see if screen line 20 is empty, if not then a jump to the *PAUSE* routine at $10CD is made. This will finish the current word by looking for a space and pause the program until an option is selected. Pausing is done by using *UNTALK* and *LISTB* is output to the screen. Once a key is pressed the program will either jump to the end routine at $10BF or clear the screen, send *TALK* to the drive and return to the *NEXT* routine at $1093, so continuing to read the file until the screen fills again or the file ends.

If end is selected the program can be re-run to read another file.

Instructions

Run the program from Basic. The program will then ask for the file you wish to read, type this in (you can use wild-cards and pattern matching.) You need not add the usual sequential codes at the end of the file name as the program will do this for you. Press return and the program will look for your file, if it does not exist then the program will inform you of this and finish, check the spelling of your file using the directory and then re-run the program. When the file is found then the contents will be displayed on the screen until the screen is nearly full, the program will then pause to allow you to finish reading the screen. Press "y" to continue or "q" to quite this file, if "y" is pressed then the screen is cleared and the program will carry on until the screen is full again or the file finishes.

Re-run the program to read another file.

```
SEQREAD

10 REM DSAVE"@SEQREAD"
20 REM ****************
30 REM * SEQREADER    *
40 REM *              *
50 REM *    V 0.1     *
60 REM *              *
70 REM * (C) D.GLASS  *
80 REM *              *
90 REM ****************
100 REM
110 REM POKE 44,32:POKE43,1:POKE 8
192,0:NEW
120 REM   POKE IN THE ABOVE BEFORE
130 REM      LOADING DATA
140 REM NOW LOAD THIS PROG AND RUN
150 REM ENTER MONITOR AND
160 REM S"SEQREAD",8,1001,1178
170 REM PROGRAM CAN NOW BE RUN AS
IF BASIC
180 :C=1:X=0
190 FOR A=4097 TO 4471
200 READ B
210 IF B=-1 THEN 290
220 POKEA,B
230 C=C+1:X=X+B
240 NEXTA
250 PRINT"NO OF DATA"; C:IF C<>375
 THEN300
260 PRINT"DATA ADDITION";X:REM IF
X<>358437THEN 310
270 PRINT"DATA OK..":PRINT"SAVE NO
W":END
280 END
290 PRINT"DATA MISSING"
300 END
310 PRINT"DATA ERROR"
320 END
330 REM
340 REM*************DATA************
*
350 REM
360 DATA 11,16,10,0,158,52,49,48,5
7
370 DATA 0,0,0,169,147,32,210,255
380 DATA 169,14,32,210,255,169,28
390 DATA 141,25,255,141,59,5,162,2
400 DATA 160,0,24,32,240,255,32,34
410 DATA 17,162,4,160,0,24,32,240
420 DATA 255,32,34,17,162,3,160,0
430 DATA 24,32,240,255,160,60,141
440 DATA 59,5,24,162,50,160,17,32
450 DATA 11,17,160,0,32,207,255,20
1
460 DATA 13,240,7,153,51,3,200,76
470 DATA 75,16,169,44,153,51,3,200
480 DATA 169,83,153,51,3,200,169,4
4
490 DATA 153,51,3,200,169,82,153,5
1

500 DATA 3,200,152,162,51,160,3,32
510 DATA 189,255,169,3,162,8,160,0
520 DATA 32,186,255,32,192,255,162
530 DATA 3,32,198,255,169,13,32,21
0
540 DATA 255,32,210,255,32,207,255
550 DATA 32,210,255,56,32,240,255
560 DATA 224,20,240,44,32,183,255
570 DATA 41,64,208,23,32,183,255,4
1
580 DATA 2,208,9,32,234,255,32,228
590 DATA 255,76,147,16,162,102,160
600 DATA 17,32,11,17,169,3,32,195
610 DATA 255,32,204,255,169,0,141
620 DATA 59,5,96,32,207,255,32,210
630 DATA 255,201,13,208,246,32,171
640 DATA 255,169,0,141,59,5,162,87
650 DATA 160,17,32,11,17,169,50,14
1
660 DATA 59,5,162,0,32,198,255,32
```

```
670 DATA 228,255,201,81,240,200,20
1
680 DATA 32,208,240,32,103,197,169
690 DATA 8,32,180,255,162,3,32,198
700 DATA 255,76,147,16,134,5,132,6
710 DATA 160,0,177,5,240,12,32,210
720 DATA 255,230,5,208,2,230,6,76
730 DATA 17,17,96,162,0,169,192,22
4
740 DATA 40,240,7,32,210,255,232,7
6
750 DATA 35,17,96,87,72,73,67,72,3
2
760 DATA 83,69,81,32,70,73,76,69,6
3
770 DATA 32,0,13,32,90,82,59,83,83
780 DATA 32,83,80,65,67,69,32,84,7
9
790 DATA 32,67,79,78,84,44,32,34,2
09
800 DATA 34,32,84,79,32,81,85,73,9
4
810 DATA 0,13,32,32,32,32,32,32,32
820 DATA 78,79,32,70,73,76,69,33,0
830 DATA 1
```

```
DEVICE NUMBER

10 REM DSAVE"@DEVICE NO"
20 REM ***************
30 REM * 1551 DEVICE *
40 REM *  NUMBER     *
50 REM *   V 0.1     *
60 REM *             *
70 REM * (C) D.GLASS *
80 REM *             *
90 REM ***************
100 REM
110 REM POKE 44,32:POKE43,1:POKE 8
192,0:NEW
120 REM   POKE IN THE ABOVE BEFORE
130 REM      LOADING DATA
140 REM NOW LOAD THIS PROG AND RUN
150 REM ENTER MONITOR AND
160 REM S"SEQREAD",8,1001,1178
170 REM PROGRAM CAN NOW BE RUN AS
IF BASIC
180 :C=1:X=0
190 FOR A=4097 TO 4471
200 READ B
210 IF B=-1 THEN 250
220 POKEA,B
230 C=C+1:X=X+B
240 NEXTA
250 PRINT"NO OF DATA"; C:IF C<>374
 THEN290
260 PRINT"DATA ADDITION";X:IF X<>3
2415THEN 310
270 PRINT"DATA OK..":PRINT"SAVE NO
W!":END
280 END
290 PRINT"DATA MISSING"
300 END
310 PRINT"DATA ERROR"
320 END
330 REM
340 REM*************DATA***********
*
350 REM
500 DATA 11,16,10,0,158,52,78,49,5
7
501 DATA 0,0,0,169,147,32,210,255
502 DATA 169,29,141,25,255,141,59
503 DATA 5,162,2,160,0,24,32,240,2
55
504 DATA 32,182,16,162,4,160,0,24
505 DATA 32,240,255,32,182,16,162
506 DATA 3,160,3,24,32,240,255,169
```

Getting It In

Basic needs to be moved to $2000 before loading the Basic loader.

Type the following *exactly* as shown, check before pressing return.

POKE 44,32:POKE43,1:POKE8192,0:NEW (RETURN)

This will raise BASIC, giving space for the M/C. Load and run the Basic loader.

If all is well then the program will say so. If it is, then enter the **MONITOR** and type the following:-

S"SEQREAD",D,1001,1178

Where D=8 for disk or 1 for tape.

The new program *SEQREAD* will be saved.

Reset the computer or if you have more than one of my routines then type **F 1000 1FFF 00** (RETURN) to clear the work space then type **X** to return to Basic, type NEW (RETURN) and you are ready to load the next BASIC loader.

1551 Head Cleaner

This is an essential program for the 1551 user.

When the drive head is too dirty to read a disk, cleaning usually requires keeping a cleaning disk spinning for about thirty seconds. This program (held on tape for obvious reasons!) will spin your disk for you.

How It Works

The program is in M/C to keep loading time to a minimum. We start at address $1001 so that the program can be run from Basic, after setting up the screen display by changing colours and using the *LINES* routine ($10B9) to draw two lines across the top of the screen and by using the *MULTI-WRITE* sub routine at $10C9 to write *LISTA*. The section at $1045-$104C will set the top of a screen window just under the two lines, the program now waits for the user to insert a cleaning disk and confirm that fact using the keypress routine at $1056.

When ready the program will set up a count of seven, and send an *INITIALIZE* command to the disk drive, resetting the drive and therefore spinning the disk, after resetting has occurred the program will decrement the on-screen counter, checking that "0" has not been reached, and send another *I0* etc. until "0" is reached. This takes about thirty seconds. A sub-routine will check to see if the letter *N* has been pressed, if so the program will branch to *NO* ($109F) which will close the channels and return to Basic. If the count reaches 0 without interruption then the channels will be closed and the program stopped.

Instructions

Run the program from Basic. The program will pause for you to insert a cleaning disk. Press "y" then you are ready and the count down will begin. If for any reason you need to stop the cleaning then press "n" and the program will stop, close the channels to the disk drive and return to Basic.

Type RUN to restart.

Getting It In

Basic needs to be moved to $2000 before loading the basic loader.

Type the following *exactly* as shown, check before pressing return.

POKE 44,32:POKE43,1:POKE8192:NEW (RETURN)

This will raise Basic, giving space for the M/C. Load and run the Basic loader.

If all is well then the program will say so. If it is, then enter the MONITOR and type the following:

```
511 DATA 255,133,3,201,56,240,7,20
1
512 DATA 57,240,23,76,86,16,169,2
513 DATA 162,180,160,16,32,189,255
514 DATA 169,15,162,9,168,32,186,2
55
515 DATA 76,139,16,169,2,162,178,1
60
516 DATA 16,32,189,255,169,15,162
517 DATA 8,168,32,186,255,32,192,2
55
518 DATA 169,15,32,195,255,169,147
519 DATA 32,210,255,162,0,160,0,24
520 DATA 32,240,255,162,83,160,17
521 DATA 32,198,16,165,3,32,210,25
5
522 DATA 169,0,141,59,5,96,37,57,3
7
523 DATA 56,162,0,169,192,224,40,2
40
524 DATA 7,32,210,255,232,76,184,1
6
525 DATA 96,134,5,132,6,160,0,177
526 DATA 5,240,12,32,210,255,230,5
527 DATA 208,2,230,6,76,204,16,96
528 DATA 32,49,53,53,49,32,68,69,8
6
529 DATA 73,67,69,32,78,85,77,66,6
9
530 DATA 82,32,40,67,41,32,68,46,7
1
531 DATA 76,65,83,83,13,13,0,13,13
532 DATA 13,32,32,32,32,83,87,73,8
4
533 DATA 67,72,32,79,70,32,84,72,6
9
534 DATA 32,79,84,72,69,82,32,68,8
2
535 DATA 73,86,69,40,83,41,13,13,3
2
536 DATA 32,32,32,32,32,32,32,68,7
8
537 DATA 84,69,82,32,68,69,86,73,6
7
538 DATA 69,32,78,85,77,66,69,82,1
3
539 DATA 32,32,32,32,32,32,32,32,3
2
540 DATA 32,32,32,40,56,47,57,41,5
8
541 DATA 0,13,13,13,13,13,13,32,32
542 DATA 32,32,32,32,68,69,86,73,6
7
543 DATA 69,40,83,41,32,67,72,65,7
8
544 DATA 71,69,68,32,84,79,32,35,0
545 DATA -1
```

```
1551 HEAD CLEAN

10 REM DSAVE"@1551 HEAD CLEANER"
20 REM ***************
30 REM * 1551 HEAD    *
40 REM *  CLEANER     *
50 REM *   V 0.1      *
60 REM *              *
70 REM * (C) D.GLASS *
80 REM *              *
90 REM ***************
100 REM
110 REM POKE 44,32:POKE13,1:POKE 8
192,0:NEW
120 REM   POKE IN THE ABOVE BEFORE
130 REM      LOADING DATA
140 REM NOW LOAD THIS PROG AND RUN
150 REM ENTER MONITOR AND
160 REM S"DISK",8,1001,1109
170 REM PROGRAM CAN NOW BE RUN AS
IF BASIC
180 :C=1:X=0
190 FOR A=4097 TO 4553
200 READ B
210 IF B=-1 THEN 250
220 POKEA,B
230 C=C+1:X=X+B
240 NEXTA
250 PRINT"NO OF DATA"; C:IF C<>457
 THEN290
260 PRINT"DATA ADDITION";X:IF X<>3
3382THEN 310
270 PRINT"DATA OK..":PRINT"SAVE NO
W":END
280 END
290 PRINT"DATA MISSING"
300 END
310 PRINT"DATA ERROR"
320 END
330 REM
340 REM*************DATA***********

350 REM
500 DATA 11,15,10,0,159,52,49,49,5
1
501 DATA 0,0,0,169,147,32,210,255
502 DATA 169,29,141,25,255,141,59
503 DATA 5,132,2,160,0,24,32,240,2
55
504 DATA 32,195,15,162,4,160,0,24
505 DATA 32,240,255,32,185,15,162
506 DATA 3,160,3,24,32,240,255,169
507 DATA 50,141,59,5,24,162,226,16
0
508 DATA 16,32,201,16,169,27,32,21
0
509 DATA 255,169,84,32,210,255,162
510 DATA 4,160,17,32,201,15,32,228


511 DATA 255,201,89,240,7,201,78,2
40
512 DATA 62,76,86,16,169,147,32,21
0
513 DATA 255,162,78,160,17,32,201
514 DATA 16,169,55,141,238,13,169
515 DATA 2,162,224,160,16,32,189,2
55
516 DATA 169,15,162,8,168,32,186,2
55
517 DATA 32,192,255,169,15,32,195
518 DATA 255,32,228,255,201,78,240
519 DATA 10,205,238,13,173,238,13
520 DATA 201,48,208,214,169,147,32
521 DATA 210,255,162,0,160,0,24,32
522 DATA 240,255,162,170,160,17,32
523 DATA 201,16,169,0,141,59,5,96
524 DATA 162,0,169,192,224,40,240
525 DATA 7,32,210,255,232,76,187,1
6
526 DATA 96,134,5,132,6,160,0,177
527 DATA 5,240,12,32,210,255,230,5
528 DATA 208,2,230,6,76,207,16,96
529 DATA 73,79,32,32,32,32,32,32,4
9
530 DATA 53,53,49,32,72,69,65,68,3
2
531 DATA 67,76,69,65,78,69,82,32,8
5
532 DATA 84,73,76,73,84,89,13,13,0
533 DATA 13,13,13,13,32,73,78,83,6
9
534 DATA 82,84,32,67,76,69,65,78,7
3
535 DATA 78,71,32,68,73,83,75,44,8
0
536 DATA 82,69,83,83,32,34,89,34,3
2
537 DATA 84,79,32,83,84,65,82,84,1
3
538 DATA 13,32,32,32,32,32,32,32,3
2
539 DATA 80,82,69,83,83,32,34,78,3
4
540 DATA 32,84,79,32,65,66,79,82,8
4
541 DATA 13,0,13,13,32,32,32,32,32
542 DATA 32,32,32,79,75,13,32,32,3
2
543 DATA 32,32,32,32,32,82,85,79,7
8
544 DATA 73,78,71,46,46,46,46,46,4
6
545 DATA 46,46,46,13,13,32,80,82,6
9
546 DATA 83,83,32,78,32,84,79,32,6
5
547 DATA 66,79,82,84,44,32,65,32,3
4
548 DATA 73,79,34,83,61,51,48,32,8
3
549 DATA 69,67,79,78,68,83,13,13,3
2
550 DATA 84,73,77,69,32,73,78,32,3
4
551 DATA 73,48,34,0,13,13,13,13,13
552 DATA 13,32,32,32,32,32,32,80,8
2
553 DATA 79,71,82,65,77,32,84,69,8
2
554 DATA 77,73,78,65,84,69,68,00,-
1
```

S"1551 HEAD CLEAN",D,1001,11C9

Where D=8 for disk or 1 for tap.

The new program *1551 HEAD CLEAN* will be saved.

Reset the computer or if you have more than one of my routines then type **F 1000 1FFF 00 (RETURN)** to clear the work space then type X to return to Basic, type NEW (RETURN) and you are ready to load the next Basic loader.

1551 Device

Do you have more than one Disk Drive?

Many people do not like opening up their drives and cutting jumpers etc. in order to access the second drive.

A short, quick MC program will do this for you. It was especially written for the 1551.

How It Works

The start is at address $1001 so that the program can be run from Basic, after setting up the screen display by changing colours and using the "LINES" routine ($10B6) to draw two lines across the top of the screen and by using the *MULTI-WRITE* sub routine ($11C6) to write *LISTA*, the program now uses the keypress routine ($1056) to ask for the device number required and will compare the input to "8" and "9". If neither then a loop is made. The routine will jump to one of two routines, *EIGHT* ($1066) *NINE* (107A) to select the number before passing to *OVER* ($108B) to send the command to the drive, closing the command channels before printing *LISTC* ($1153) to the screen, telling you that the number has been changed.

Instructions

Run the program from Basic. The program will pause and tell you to switch of all of the drives that you do NOT require changing.

Switch off and confirm this by pressing either "8" or "9" as required.

The drive will now be changed and the program will returned to Basic.

Getting It In

Basic needs to be moved to $2000 before loading the Basic loader.

Type the following *exactly* as shown, check before pressing return.

POKE 44,32:POKE43,1:POKE8192,0:NEW (RETURN)

This will raise Basic, giving space for the M/C. Load and run the Basic loader.

If all is well then the program will say so. If it is, then enter the MONITOR and type the following:

S"1551 DEVICE NUM",D,1001,1178

Where D=8 for disk or 1 for tape.

The new program *1551 DEVICE NUM* will be saved.

Reset the computer or if you have more than one of my routines then type **F 1000 1FFF 00 (RETURN)** to clearn the work space then type X to return to Basic, type NEW (RETURN) and you are ready to carry on working.

Filo-Stacks

Get to grips with the First In Last Out format of the Stack

By Steven Burgess

A stack can be described more simply by using an analogy, if you have a tower of building blocks, a stack of building blocks, you can only take blocks off the top and you can only put blocks on the top, if you try to take a block from the bottom of the pile (stack) then it will fall down, it is impossible to put a block on the bottom of this pile without first lifting it. The same rules apply to stacks in computers, data can only be put on the top of a stack and taken from the top. The acronym FILO, describes this, it stands for First In Last Out. The first item to be put on is the last to be taken off, and the last item to be put on is the first to be taken off.

SP	CONTENTS	LOCATION
		1
		2
		3
		4
		5
		6
		7
		8
		9
		10
		11
		12
		100
		101
		102
		103

STACK POINTER = 0

DIAGRAM 1.0

Stacks are used extensively in machine language programs and are also used by BASIC, whenever GOSUB is encountered, the return address is stored on a stack, so that the computer can return to the correct place when the RETURN statement appears. Stacks are also used during FOR... NEXT loops. Machine language programmers use stacks to store the values of registers which may be corrupted by a routine, which they wish to use.

Pushing!!

The process of adding items to a stack is called pushing, you push a piece of data onto the stack. The actual programming of this is very simple. In order to push data onto a stack you must have a number of things:

1..A stack. (can use an array in BASIC)
2..A stack pointer.
3..Data to push.

	CONTENTS	LOCATION
SP ►	1021	1
		2
		3
		4
		5
		6
		7
		8
		100
		101
		102
		103
		104

STACK POINTER = 1

DIAGRAM 1.1

When you enter the data which you want to push the stack pointer is increased by one, the data is then PUSHED onto the location indicated by the stack pointer and you have finished. The same process is executed every time you push to a stack.

Let's pretend we have set up an array, in BASIC, as a stack, there is, currently no data stored therein. The stack pointer is pointing at location 0 (see diagram 1.0), let's enter a value, 1021, we increase the stack pointer by 1 and store 1021 in location 1 (see diagram 1.1). Entering another value, 4938, causes the same process to occur, except the stack pointer now becomes 2. (see diagram 1.2).

Popping!!

To remove an item from a stack you pop it. Popping an item from the stack causes the item which the stack pointer is pointing at,

	CONTENTS	LOCATION
	1021	1
SP ►	4938	2
		3
		4
		5
		6
		7
		8
		100
		101
		102
		103
		104

STACK POINTER = 2

DIAGRAM 1.2

```
PROGRAM:STACK DEMO

68   10 DIMS$(20)
FB   20 PRINTCHR$(147)"[DOWN2] [C
     A,S*5,CS]"
FC   30 FORL=1 TO 20:PRINT" [S-,S
     PC5,S-]";L:NEXT
D9   40 PRINT"[HOME]";
0A   50 A$="STACK DEMONSTRATION"
1D   60 PRINTTAB(20-LEN(A$)/2)A$
67   70 PRINTTAB(20)"[DOWN5]MENU"
A5   80 PRINTTAB(20)"[DOWN2]1..PO
     P"
5D   90 PRINTTAB(20)"[DOWN2]2..PU
     SH"
0F   100 PRINTTAB(20)"[DOWN2]3..E
     ND"
8D   110 SP=0:PRINT"[HOME]";:FORL
     =0 TO SP+2:PRINT"[DOWN2]>"
14   120 GETA$:IFA$=""THEN120
89   130 IF A$<"1"ORA$>"3"THEN120
AA   140 IF A$="1"AND SP=0 THEN E
     =2:GOSUB200'ERROR ROUTINE:GO
     TO12020
08   150 IF A$="2" AND SP=20 THEN
      E=1:GOSUB200'ERROR ROUTINE:
     GOTO 120
13   160 IF A$="3"THEN PRINT"[CLR
     ]";:END
C4   170 IF A$="1" THEN GOSUB320'
     POP
65   180 IF A$="2" THEN GOSUB400'
     PUSH
A8   190 GOTO 120
61   200 REM**********
8B   210 REM* ERROR *
2D   220 REM**********
B4   230 D$=""
CA   240 :
79   250 IF E=1 THEN E$="STACK FU
     LL : CAN'T PUSH"
A8   260 IF E=2 THEN E$="STACK EM
     PTY : CAN'T POP"
53   270 PRINT"[HOME]"TAB(15)"[DO
     WN22]";E$
A5   280 FORL=1 TO 2000:NEXT
F4   290 FORL=1 TO LEN(E$):D$=D$+
     " ":NEXT
D8   300 PRINT"[HOME]"TAB(15)"[DO
     WN22]";D$
B9   310 RETURN
54   320 REM********
AB   330 REM* POP *
E0   340 REM**^*****
65   350 :
C4   360 PRINT"[HOME]"TAB(15)"[DO
     WN22]POPPED ITEM:";S$(SP):SP
     =SP-1
B0   370 GOSUB510'UPDATE STACK
C9   380 FORL=1 TO 2000:NEXT
E9   390 PRINT"[HOME]"TAB(15)"[DO
     WN22,SPC17]":RETURN
0E   400 REM*********
CC   410 REM* PUSH *
9A   420 REM*********
95   430 :
50   440 PRINT"[HOME]"TAB(12)"[DO
     WN22]ENTER ITEM:";
AE   450 INPUTD$
10   460 PRINT"[HOME]"TAB(12)"[DO
     WN22,SPC33]"
35   470 D$=LEFT$(D$,5)
D7   480 SP=SP+1:S$(SP)=D$
88   490 GOSUB510'UPDATE STACK
7B   500 RETURN
70   510 REM*****************
50   520 REM* UPDATE STACK *
7B   530 REM*****************
FC   540 PRINT"[HOME,DOWN2]"
E1   550 FORL=1 TO 20:PRINT"[RIGH
     T2]"S$(L):NEXT
3B   560 PRINT"[HOME]";
30   570 FORL=1 TO 20+3:PRINT" ":
     NEXT
6C   590 IF A$="2"THEN D=+1:
C7   600 PRINT"[HOME]";:FORL=1 TO
      (SP+2):PRINT" ":NEXT:PRINT"
     >"
1A   610 PRINT"[HOME]"TAB(20)"[DO
     WN5]STACK POINTER:  [LEFT2]"
     ;SP
E0   620 RETURN
```

the last item to be pushed, to be taken off the stack (popped!) the stack pointer is then decreased, pointing at the item which was pushed before the previous one.

We shall now pop an item from the stack described above (see diag 1.2), to pop we simply read the item which is stored in the location indicated by the stack pointer. The stack pointer contains 2 so the item we pop is stored in location 2. The item is 4938, we then decrease the stack pointer by 1 so it becomes 1. Popping again gives us 1021 and empties the stack. The stack is empty when the stack pointer is 0. The stack is full when the stack pointer is equal to the number of elements defined in the array.

The program "STACK DEMO" demonstrates popping & pushing to the full. Type in the program using the syntax checker. Save it to DISK/TAPE and type RUN (RETURN).

On execution you will be presented with a graphical represenation of a stack on the left hand side of the screen, the stack has room for 20 elements, on the right hand side of the screen is a menu. The options are as follows:

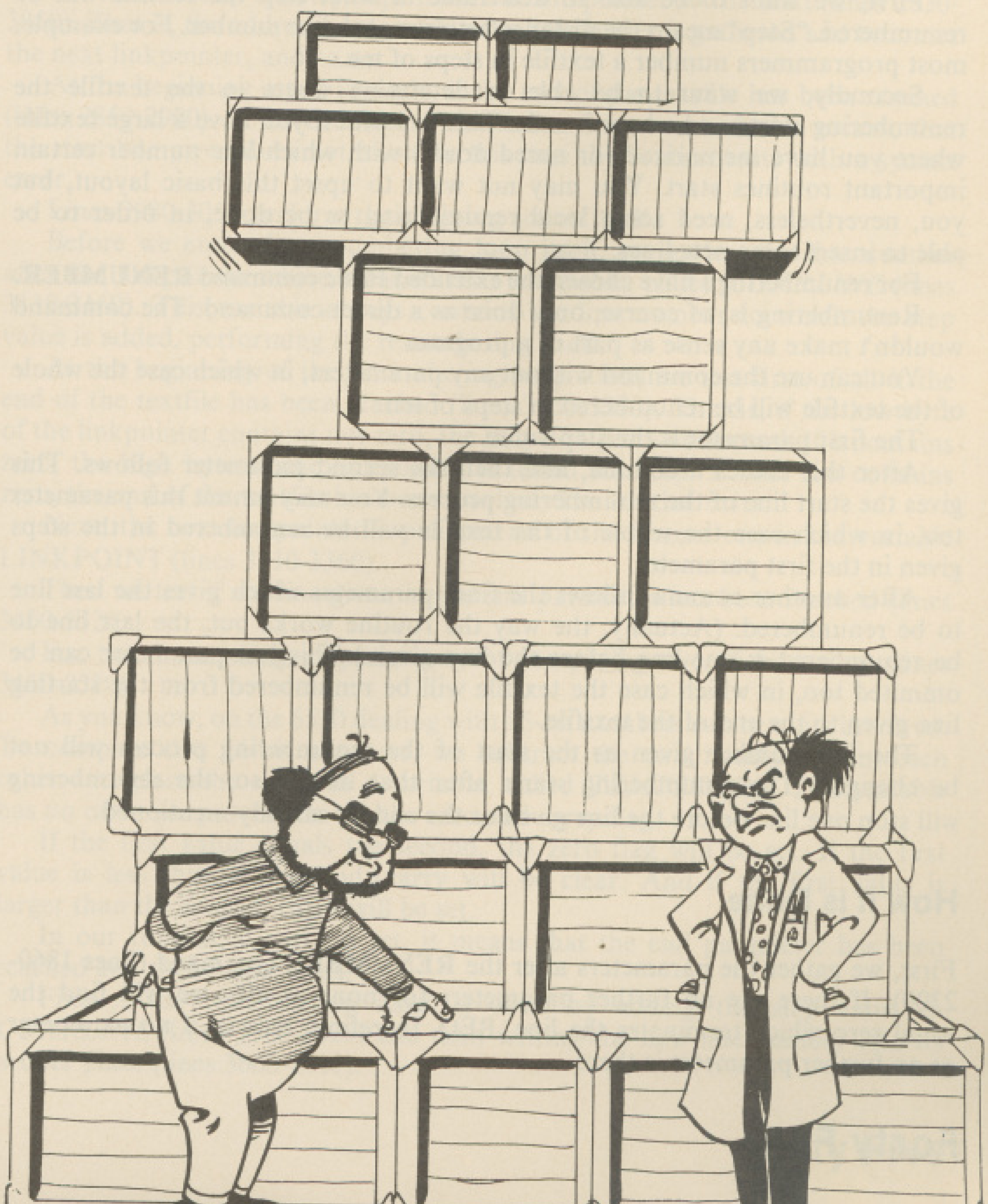
1..POP
2..PUSH
3..END

On selecting option 1 you will be told what the value of the POPped item is, if the stack is empty you will be informed.

Selecting 2, you will be asked to enter a value, numeric or string, the value will then be added to the stack and you will be returned to the menu.

End is self explanatory.

Well I hope you can find some use for stacks and, although, the program given is not really useful it should demonstrate how stacks operate, and the routines can be adapted for use in your own programs should you find the need.



Exten
Bas

Renumbering your textfile is easier than you may think

By Burghard-Henry Lehmann

When developing a large Basic program you'll find that sooner or later the line numbers become quite messy. In one part of your program you have oodles of space between line numbers, while in other parts it's impossble to insert a single new line.

The only answer is to renumber the textfile.

This is what the tool kit routine does which we want to develop this month. Again, once you understand how Basic deals with lines and line numbers, this is quite straightforward to do. And here Commodore Basic makes, for once, life easier for us, by having structured a textfile in quite a special way.

The Linkpointer

Commodore starts each Basic line with a pointer to the next line. In this way a Basic textfile is chained. To find a specific line you don't have to sift through the whole of the textfile. Instead you just jump from line pointer to line pointer, each time looking at the actual line number which follows directly afterwards. The rest of the line you can ignore.

The linkpointer contains the address of the start of the next line, expressed in the usual low byte/high fashion.

The end of the textile has been reached when the two linkpointer locations contain zero.

Renumbering a textfile involves simply jumping from linkpointer to linkpointer, each time changing the line number that follows in the next two locations.

Renumbering Options

But in order to make our renumbering routine as useful as posssible it is a good idea to include some options into the command.

First, we want to be able to determine in what step the textfile will be renumbered. "Step" means the distance between each line number. For example, most programmers number a textfile in steps of ten.

Secondly, we want to be able to determine where in the textfile the renumbering starts and where it ends. This is useful if you have a large textfile where you have memorized (or noted down) with which line number certain important routines start. You may not want to upset this basic layout, but you, nevertheless, need some local renumbering to be done, in order to be able to insert some new lines.

For renumbering I have chosen the extended Basic command **RENUMBER.**

Renumbering is, of course, only done as a direct command. The command wouldn't make any sense as part of a program.

You can use the command without any parameters, in which case the whole of the textfile will be renumbered in steps of ten.

The first parameter is the step value.

After this comes a comma, and then the second parameter follows. This gives the start line of the renumbering process. You may ommit this parameter too, in which case the whole of the textfile will be renumbered in the steps given in the first parameter.

After another comma follows the final parameter which gives the last line to be renumbered. (Actually, the way the routine works out, the last line to be renumbered is one line before the line given.) This last parameter can be ommited too, in which case the textfile will be renumbered from the starting line given to the end of the textfile.

The line number given as the start of the renumbering process will not be changed. The renumbering starts after that line. Also, the renumbering will stop one line before the line given as the end, as already mentioned.

How it is Done

First, we gather the parameters after the **RENUMBER** command (lines 1860-2300). If there are no further parameters (or none at all), we will find the usual zero which terminates the line. BEQ, therefore, tells us if no parameter or no further parameter is there.

```
10                 ORG 49152
20                 ENT
30     ;
40     CHARGET     EQU $0073
50     EXECVECT    EQU $0308
60     PRINT       EQU $E716
70     PRINTNO     EQU $BDCD
80     PRINTSTR    EQU $AB1E
90     PRINTCR     EQU $AAD7
100    PLOT        EQU $FFF0
110    ;
120    STEP        EQU 251
130    START       EQU 253
140    END         EQU $14
150    LINKPOINT   EQU $61
160    CURRLINE    EQU $63
170    TEMPSTORE   EQU $65
180    ;
190    ;
200    ;
210    ;TURN EXTENDED BASIC ON
220    ;BY CHANGING VECTOR AT $0308
230    ;
240    EXTBASON    LDA #<PRGSTART
250                STA <EXECVECT
260                LDA #>PRGSTART
270                STA >EXECVECT
280    ;
290                RTS
300    ;
310    ;
320    ;
330    ;TURN EXTENDED BASIC OFF
340    ;BY CHANGING VECTOR AT $0308
350    ;BACK TO NORMAL ($A7E4)
360    ;
370    EXTBASOFF   LDA #<$A7E4
380                STA <EXECVECT
390                LDA #>$A7E4
400                STA >EXECVECT
410    ;
420                RTS
430    ;
440    ;
450    ;
460    ;*** MAIN PROGRAM ENTRY ***
470    ;
480    ;LOOK FOR EXTENDED BASIC COMMANDS
490    ;
500    PRGSTART    JSR CHARGET
510                JSR EXECSTM
520                JMP $A7AE
530    ;
540    ;IF BASIC TOKEN, GO NORMAL.
550    ;
560    EXECSTM     CMP #128
570                BCS NORMAL1
580    ;
590    ;SAVE $7A/7B.
600    ;
610                LDY <$7A
620                STY <251
630                LDY >$7A
640                STY >251
650    ;
660                CMP '0
670                BNE NEXT
680                JMP OFF.RT
690    ;
700    NEXT        CMP 'C
```

nding sic

If a parameter is given we gather it into the appropriate variable by calling on two ROM-routines; $AD8A gets the value itself and places it in the floating point accumulator 1. $B7F7 gets the value from the floating point accumulator and puts it into zero page $14/15, and also into the Y-register (low byte) and the accumulator (high byte).

After each parameter the next character is tested to see if it is a comma. If it isn't, the routine exits by giving a syntax error report. This syntax error report is forced simply by jumping to the normal routine (lines 1100-1150) instead of returning from the subroutine, since the whole of the renumbering routine is a subroutine.

In the case of no step parameter, we enter 10 into the variable, called *STEP* (lines 2350-2380). This will result in the textfile being renumbered in steps of ten.

In the case of no start parameter, we enter zero into the variable, called *START* (lines 2420-2440).

In the case of no end parameter, we enter the highest possible line number into the variable, called *END* (lines 2480-2500). This is, of course, 65536, or $FF in the low byte and $FF in the high byte.

```
710               BNE NEXT1
720               JSR CHARGET
730               CMP 'O
740               BNE NEXT1
750               JSR CHARGET
760               CMP 'L
770               BNE NEXT1
780               JSR CHARGET
790               CMP #$B0      ;'OR' TOKEN
800               BEQ COLOR.RT
810    ;
820    NEXT1      CMP 'R
830               BNE NORMAL
840               JSR CHARGET
850               CMP 'E
860               BNE NORMAL
870               JSR CHARGET
880               CMP 'N
890               BNE NORMAL
900               JSR CHARGET
910               CMP 'U
920               BNE NORMAL
930               JSR CHARGET
940               CMP 'M
950               BNE NORMAL
960               JSR CHARGET
970               CMP 'B
980               BNE NORMAL
990               JSR CHARGET
1000              CMP 'E
1010              BNE NORMAL
1020              JSR CHARGET
1030              CMP 'R
1040              BEQ RENUMB.RT
1050   ;
1060   ;
1070   ;
1080   ;DO NORMAL ROM-ROUTINE.
1090   ;
1100   NORMAL     LDA <251
1110              STA <$7A
1120              LDA >251
1130              STA >$7A
1140   ;
1150   NORMAL1    JMP $A7ED
1160   ;
1170   ;
1180   ;
1190   ;
1200   ;EXECUTE 'COLOR' COMMAND:
1210   ;
1220   ;GET INK PARAMETER.
1230   ;
1240   COLOR.RT   JSR CHARGET
1250              JSR $AD8A
1260              JSR $B7F7
1270   ;
1280   ;CHANGE INK COLOUR.
1290   ;
1300              STY 646
1310   ;
1320   ;GET PAPER PARAMETER.
1330   ;
1340              JSR CHARGET
1350              JSR $AD8A
1360              JSR $B7F7
1370   ;
1380   ;CHANGE PAPER COLOUR.
1390   ;
```

Renumbering a Textfile

First, we get the beginning of the textfile from the system variables $2B/2C and copy it into our variables, called *LINKPOINT* (lines 2680-2710). The beginning of the textfile means also the first linkpointer in the chain of all the linkpointers.

Next, we test if the start parameter had been given (lines 2750-2780). If it hadn't we jump straight to beginning of the renumbering routine proper. Otherwise we have to find the line where renumbering starts.

As I've said, with the help of the linkpointer, this is pretty easy.

We enter a loop which jumps from one linkpointer to the next (lines 2830-3050). That is, the address contained in the linkpointer is gathered and becomes the next linkpointer, and so on.

At the beginning a test is made, if the end of the textfile has been reached (lines 2850-2900). If the end of the textfile has been reached, this means, that the start line given does not exist. In this case the routine exits with a syntax error.

Lines 2980-3050 perform the chaining action itself.

Before we enter the renumbering loop itself, we gather the line number after the linkpointer where we start into a variable, called *CURRLINE* (lines 3110-3160). This variable always contains the line number to which the step value is added, performing the renumbering itself.

At the beginning of the renumbering loop itself, we test first of all if the end of the textfile has been reached (lines 3250-3290). That is, if the low byte of the linkpointer contains not zero, the loop continues as normal. If it contains zero, the high byte of the linkpointer is tested for zero. If that too contains zero, the end of the textfile has been reached. The routine exits.

Next, the next linkpointer is put instead of the former one in the variable LINKPOINT (lines 3310-3360).

Then we test if the line given in the end parameter has been reached (lines 3400-3520).

For this I am using a special way of comparing two 16-bit values (lines 3460-3520).

As you know, on the 6510 dealing with 16-bit numbers can be quite involved. To compare two 16-bit numbers, we subtract the two numbers from each other and place the result in a variable, called *TEMPSTORE.* This variable has no other purpose but to set the zero and carry flag.

If the first value equals the second, the zero flag will be set. If the first value is less than the second, carry will be clear. And if the first value is larger than the second, carry will be set.

In our routine, if carry is set, it means that the end parameter has been reached and the routine exits.

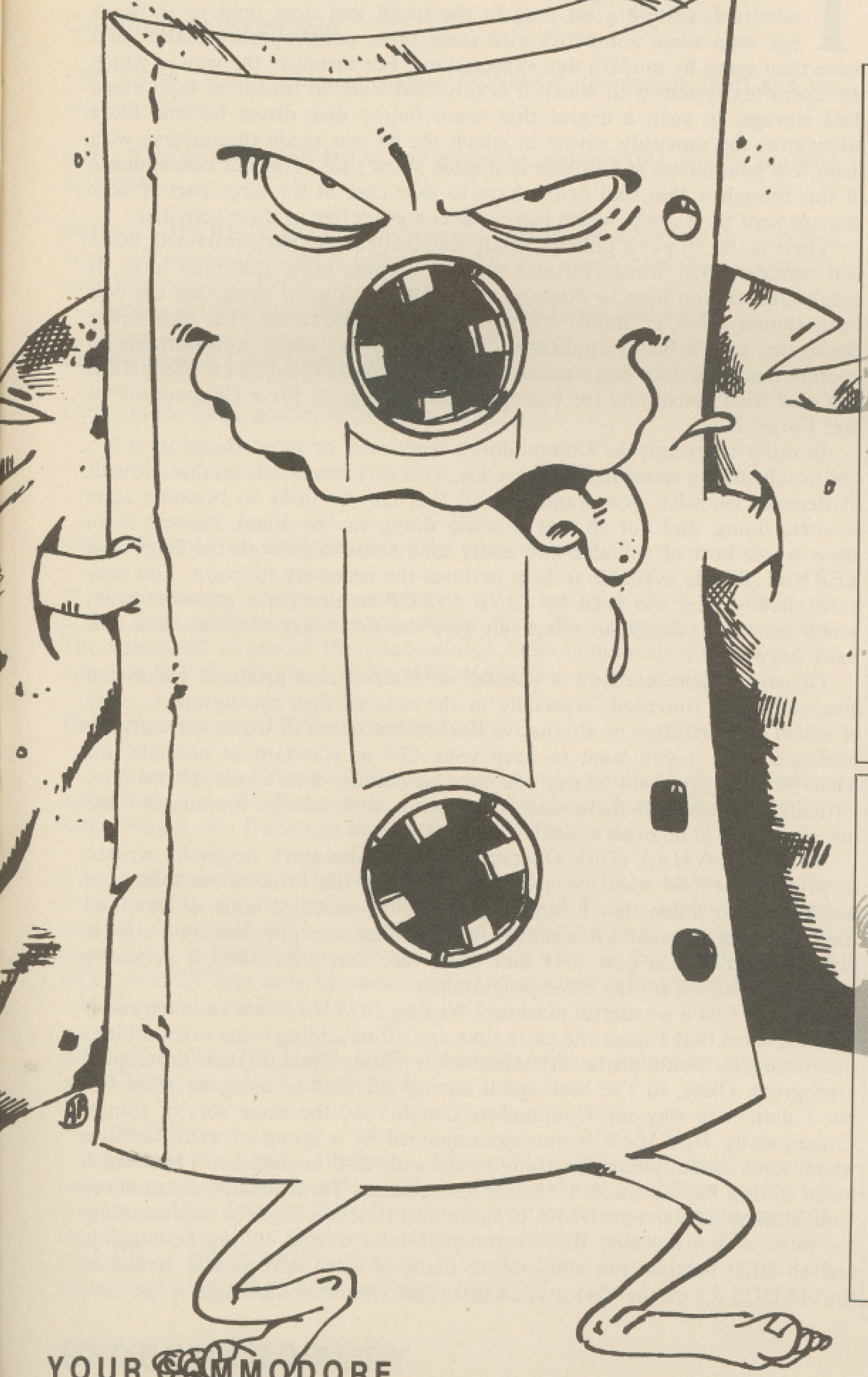
Finally, the renumbering itself is done by adding the step value to *CURRLINE* (lines 3560-3620) and then writing the new line number into its proper place (lines 3660-3710).

```
1400             STY 53281
1410  ;
1420  ;GET BORDER PARAMETER.
1430  ;
1440             JSR CHARGET
1450             JSR $AD8A
1460             JSR $B7F7
1470  ;
1480  ;CHANGE BORDER COLOUR.
1490  ;
1500             STY 53280
1510  ;
1520  ;JUMP TO REST OF ROM-ROUTINE.
1530  ;
1540             RTS
1550  ;
1560  ;
1570  ;
1580  ;TEST FOR REST OF 'OFF'.
1590  ;
1600  OFF.RT     JSR CHARGET
1610             CMP 'F
1620             BEQ OFF.RT1
1630             JMP NORMAL
1640  OFF.RT1    JSR CHARGET
1650             CMP 'F
1660             BEQ OFF.RT2
1670             JMP NORMAL
1680  ;
1690  ;EXECUTE 'OFF' COMMAND.
1700  ;
1710  OFF.RT2    JSR EXTBASOFF
1720  ;
1730  ;GET NEXT CHARACTER AND
1740  ;JUMP TO REST OF ROM-ROUTINE.
1750  ;
1760             JSR CHARGET
1770             RTS
1780  ;
1790  ;
1800  ;
1810  ;***  RENUMBER ROUTINE ***
1820  ;
1830  ;GET STEPS PARAMETER; IF ZERO, NO
1840  ;PARAMETERS AT ALL.
1850  ;
1860  RENUMB.RT  JSR CHARGET
1870             BEQ NOPARAMS
1880  ;
1890             JSR $AD8A
1900             JSR $B7F7
1910  ;
1920             STY <STEP
1930             STA >STEP
1940  ;
1950  ;NEXT HAS TO BE A COMMA; IF NOT
1960  ;EXIT WITH SYNTAX ERROR.
1970  ;
1980             LDY #0
1990             LDA ($7A),Y
2000             BEQ NOSTART
2010             CMP ',
2020             BNE ERROR
2030  ;
2040  ;GET START OF RENUMBERING PARAM.
2050  ;
2060             JSR CHARGET
2070  ;
2080             JSR $AD8A
2090             JSR $B7F7
2100  ;
2110             STY <START
2120             STA >START
2130  ;
2140  ;NEXT HAS TO BE A COMMA; IF NOT
2150  ;EXIT WITH SYNTAX ERROR.
2160  ;
2170             LDY #0
2180             LDA ($7A),Y
2190             BEQ NOEND
2200             CMP ',
2210             BNE ERROR
2220  ;
2230  ;GET END OF RENUMBERING PARAMETER
2240  ;
2250             JSR CHARGET
2260  ;
2270             JSR $AD8A
2280             JSR $B7F7
2290  ;
2300             JMP STARTREN
2310  ;
2320  ;
2330  ;NO PARAMETERS: STEP OF 10.
2340  ;
2350  NOPARAMS   LDA #10
2360             STA <STEP
2370             LDA #0
2380             STA >STEP
2390  ;
2400  ;NO START PARAMETER: START FROM 0
2410  ;
2420  NOSTART    LDA #0
2430             STA <START
2440             STA >START
2450  ;
2460  ;NO END PARAMETER: END 65536.
2470  ;
2480  NOEND      LDA #FF
2490             STA <END
2500             STA >END
2510  ;
2520             JMP STARTREN
2530  ;
2540  ;
2550  ;
2560  ;IF ERROR, GIVE SYTAX ERROR
2570  ;REPURT AND EXIT.
2580  ;
2590  ERROR      JMP NORMAL
2600  ;
2610  ;
2620  ;
2630  ;RENUMBER ROUTINE PROPER:
2640  ;
2650  ;COPY BEGINNING OF BASIC TEXTFILE
2660  ;FROM ZEROPAGE $2B/2C INTO $61/62
2670  ;
2680  STARTREN   LDA <$2B
2690             STA <LINKPOINT
2700             LDA >$2B
2710             STA >LINKPOINT
2720  ;
2730  ;SEE, IF START PARAMETER GIVEN.
2740  ;
2750             LDA <START
2760             BNE FINDSTART
2770             LDA >START
2780             BEQ STARTFOUN
2790  ;
2800  ;IF YES, FIND START BY JUMPING
2810  ;FROM LINKPOINTER TO LINKPOINTER.
2820  ;
2830  FINDSTART LDY #2
2840             LDA (LINKPOINT),Y
2850             BNE FINDSTRT1
2860             INY
2870             LDA (LINKPOINT),Y
2880             BEQ ERROR
2890             DEY
2900             LDA (LINKPOINT),Y
2910  FINDSTRT1 CMP <START
2920             BNE FINDSTRT2
2930             INY
2940             LDA (LINKPOINT),Y
2950             CMP >START
2960             BEQ STARTFOUN
2970  ;
2980  FINDSTRT2 LDY #0
2990             LDA (LINKPOINT),Y
3000             PHA
3010             INY
3020             LDA (LINKPOINT),Y
3030             STA >LINKPOINT
3040             PLA
3050             STA <LINKPOINT
3060  ;
3070             JMP FINDSTART
3080  ;
3090  ;STORE LINE NUMBER IN CURRLINE.
3100  ;
3110  STARTFOUN LDY #2
3120             LDA (LINKPOINT),Y
3130             STA <CURRLINE
3140             INY
3150             LDA (LINKPOINT),Y
3160             STA >CURRLINE
3170  ;
3180  ;RENUMBERING LOOP:
3190  ;
3200  ;GET NEXT LINE. (IF END OF TEXT-
3210  ;FILE, EXIT.)
3220  ;
3230  RENUMLOOP LDY #0
3240             LDA (LINKPOINT),Y
3250             BNE CONTLOOP
3260             INY
3270             LDA (LINKPOINT),Y
3280             BEQ ALLDONE
3290             DEY
3300             LDA (LINKPOINT),Y
3310  CONTLOOP   PHA
3320             INY
3330             LDA (LINKPOINT),Y
3340             STA >LINKPOINT
3350             PLA
3360             STA <LINKPOINT
3370  ;
3380  ;TEST, IF END HAS BEEN REACHED.
3390  ;
3400             LDY #3
3410             LDA (LINKPOINT),Y
3420             PHA
3430             DEY
3440             LDA (LINKPOINT),Y
3450  ;
3460             SEC
3470             SBC <END
3480             STA TEMPSTORE
3490             PLA
3500             SBC >END
3510             ORA TEMPSTORE
3520             BCS ALLDONE
3530  ;
3540  ;ADD RENUMBERING-STEP TO CURRLINE
3550  ;
3560             CLC
3570             LDA <CURRLINE
3580             ADC <STEP
3590             STA <CURRLINE
3600             LDA >CURRLINE
3610             ADC >STEP
3620             STA >CURRLINE
3630  ;
3640  ;AND CHANGE LINE NUMBER.
3650  ;
3660             LDY #2
3670             LDA <CURRLINE
3680             STA (LINKPOINT),Y
3690             INY
3700             LDA >CURRLINE
3710             STA (LINKPOINT),Y
3720  ;
3730             JMP RENUMLOOP
3740  ;
3750  ;RENUMBERING DONE: EXIT.
3760  ;
3770  ALLDONE    RTS
```


Flash Load

Create your own flashing bands whilst loading and saving your creations

By Clive Horner



Flash Load is a machine code program which creates the flashing bands while loading a normal program from cassette, just like commercial software.

To use the routine, type in the Basic loader and save it. Once you are happy with it you may run it. You should now see the message *FLASH ENABLED.*

There are a couple of ways to control the program. For example in direct mode you can type:

POKE1,55 – This will reset the computer back to normal.

POKE1,53 – This enables FLASH LOAD. This is necessaary after a reset or after resetting the computer.

Also when saving programs the flashing bands will also appear.

BASIC LOADER

```
10 FORC=0TO74
15 READMC:T=T+MC:POKE53173+C,MC:NEXT
20 IFT<>13383THENPRINT"ERROR":END
30 SYS53173:PRINT"FLASH ENABLED":NEW
40 DATA169,224,133,252,169,0,133,251
50 DATA168,177,251,145,251,200,208,249
60 DATA166,252,224,255,240,6,230,252
65 DATA76,190,207,173,200,207,201,191
70 DATA240,12,160,160,133,252,169,191
75 DATA141,200,207.76.190,207,169,224
80 DATA133,252,169,238,141,199,248,169
85 DATA32,141,200.249,169,208,141,201
90 DATA248,198,1,198,1,169,255,141,200
95 DATA207,96
```

Dosman

Get the most from your disk drive with this enhanced DOS utility

By M. Holmes

The old C64, although undoubtedly still very popular, is, it must be admitted, getting a bit long in the tooth and does tend to show its age even when compared with some other contemporary makes, and more than every by modern day expectations. For instance, the way in which the operating system with which it is provided leans in favour of tape based data storage, to such a degree that when floppy disk drives became more affordable, the unwieldy nature in which the 64 was made to converse with them was guaranteed to frustrate in double quick time. The nice consequence of this though is that said drives have to take care of the large part of disk management themselves, which leaves the computer free of these activities.

There is the, to put it politely, crude simplicity of the Basic provided, when you consider what wonderful and useful keywords other machines have. It didn't take me too long to discover that really it's a good thing that the 64's Basic should be so, er, basic. Whilst it is still possible to do what most other Basics do, with a bit of application, any listings are easily transportable to another machine, since bog standard *Microsoft* based keywords are used. Have you ever tried converting for example a BBC program for a Commodore to use? Forget it.

In order to extend the Commodore's repertoire, or speed things up a bit, one usually has to resort to machine code. This isn't necessarily all that difficult (it depends on what you want; not all that can be done in machine code is worth doing, and not all that is worth doing can be done), because there are a whole host of valuable and easily used routines in both the Basic and KERNAL ROMs available to help perform the necessary function. You may have already seen and used by *LINE INPUT* routine (in a previous issue) which uses this concept to effectively give the C64 what amounts to a new Basic keyword.

Of course there are now a number of after-market products which can give you what you need, especially in the area of disk management, some of which are cartridges or alternative ROMs, and some of which are software packages. But, if you want to keep your C64 as standard as possible, for whatever it is you want to do, you need something that leaves the memory virtually untouched, is there when you need it, and remains unobtrusive and out of the way at all other times.

This is *DOSMAN* (Disk Operating System Manager), originally written to provide the C64 with the ability to recognise that disk drives exist, but not alter it so much that I cannot use my little machine code or modified Basic routines. In essence it is similar to something once provided on a utilities disk supplied with a new 1541 disk drive (are they still?), and is primarily meant to be an aid for the Basic programmer.

Isn't the C64 a wonderful machine? Writing *DOSMAN* was so much easier than expected that I spent the extra time and effort adding some extra utilities that I was sure would prove very useful while editing Basic text and developing a program. Okay, so I've been spoilt having got used to using an *IBM PC*, but I didn't see why my Commodore couldn't do the same sort of things. Consequently *DOSMAN* is now accompanied by a group of useful utilities which don't actually have anything to do with disk management, but which make editing Basic a whole lot easier and quicker. These include a cutomised Non-Maskable Interrupt (NMI), programmed function keys for implementing the most of ten repeated Basic commands used during editing/de-bugging, and an **OLD** routine. For convenience many of these have similar syntax to the old DOS 5.1 on the 1541 utilities disk, and *The Final Cartridge*.

Installing Dosman

Type in and save the program *DOSLOAD*. Once run, this will create the M/C program – *DOSMAN*. To activate *DOSMAN*, type **SYS52224** after loading.

The program and its satellites sit at 51781 ($CA45) onwards, leaving the lower 'free RAM' area free for you or your programs to use.

Commands Available

SYS 52224 – This enables/re-enables *DOSMAN*, the custom NMI and the function keys.

@ V – This disables *DOSMAN*, but leaves the custom NMI and the function keys intact.

[RUN,STOP][RESTORE] – This disables the custom NMI and the function keys, but leaves *DOSMAN* intact. A BRK instruction executed in machine code has the same effect.

Having got it in and enabled, you have access to the following:

The six primary DOS commands

Direct mode only, ignored in program mode:

@ (on its own) – get and print disk drive error message.

@ < **command** > – Send command to current disk drive if it isn't one of the three secondary commands below. You do not enclose it in quotes. The command is any of the conventional DOS commands such as @ **I** to initialise; @ V to validate; **C:NAME2=NAME1** to copy file, etc.

The three secondary DOS commands

@ < **number** > – Change the current device to number > for all further operations. e.g., @ **9** results in all further DOS activities to be carried out with device 9. @ **8** changes the current device back to 8.

@ $ < **optional mask** > – Get and display disk directory from the current device. Basic memory remains untouched. Wildcards and filetype identifiers can be used in < optional mask > to select files to view lexically or according to filetype, e.g. @ $**DOS*** lists only files beginning with the first three characters DOS; @ $????? lists only filenames of five characters in length; @ **$*=P** only lists files of type PRG.

@X – Disables *DOSMAN*. DOS commands will no longer be recognised, but will produce *SNYTAX ERROR*.

/ – LOAD

/ < **filename** > – Load filename from current device into Basic memory, replaces program already existing if any. If there was a problem during the load there will be *LOAD ERROR* displayed. You must then use @ to interrogate the drive to find out what went wrong, which will return e.g. *FILE NOT FOUND* or *DRIVE NOT READY*. If the load was successful there will be no message after *LOADING* and before *READY*.

```
D3  100 REM DOSLOAD
2B  140 S=51781
EB  150 FORL=0TO77
2D  160 C=0:FORD=0TO15
05  170 READA:C=C+A:POKE53280,A:
    POKES+L*16+D,A:NEXT
9D  180 READA:IFA<>CTHENPRINT"CH
    ECKSUM ERROR IN LINE ";200+L
    *10:STOP
3C  190 NEXT
C0  195 GOTO50000
EC  200 DATA169,1,141,25,208,32,
    159,255,165,157,16,32,165,19
    8,240,28,1991
12  210 DATA173,119,2,56,201,133
    ,144,20,201,141,176,16,56,23
    3,133,10,1914
0F  220 DATA168,185,176,204,170,
    185,177,204,168,32,196,202,3
    2,234,255,165,2753
8F  230 DATA204,208,41,198,205,2
    08,37,169,20,133,205,164,211
    ,70,207,174,2454
F3  240 DATA135,2,177,209,176,17
    ,230,207,133,206,32,36,234,1
    77,243,141,2355
1F  250 DATA135,2,174,134,2,165,
    206,73,128,32,28,234,165,1,4
    1,16,1536
D3  260 DATA240,10,160,0,132,192
    ,165,1,9,32,208,8,165,192,20
    8,5,1728
AA  270 DATA165,1,41,31,133,1,17
    3,13,220,104,168,104,170,104
    ,64,134,1626
A5  280 DATA251,132,252,160,0,17
    7,251,240,7,153,119,2,200,76
    ,202,202,2424
D7  290 DATA200,132,198,95,83,89
    ,83,53,49,57,53,49,13,0,83,8
    9,1327
0D  300 DATA83,53,49,57,53,52,13
    ,0,0,0,76,24,203,76,48,203,9
    90
1F  310 DATA76,228,167,76,90,203
    ,76,1,203,76,12,203,91,84,82
    ,65,1733
FA  320 DATA67,69,32,79,78,93,0,
    91,84,82,65,67,69,32,79,70,1
    057
4D  330 DATA70,93,0,173,249,202,
    141,8,3,173,250,202,141,9,3,
    174,1891
49  340 DATA252,202,172,253,202,
    32,72,203,96,234,234,173,246
    ,202,141,8,2722
F3  350 DATA3,173,247,202,141,9,
    3,174,255,202,172,0,203,32,7
    2,203,2091
5C  360 DATA96,234,234,134,251,1
    32,252,160,0,177,251,240,7,3
    2,210,255,2665
0E  370 DATA200,76,78,203,96,166
    ,57,169,91,32,210,255,165,58
    ,32,205,2093
9F  380 DATA189,169,93,32,210,25
    5,76,228,167,0,0,72,138,72,1
    52,72,1925
1E  390 DATA169,127,141,13,221,1
    72,13,221,48,11,32,188,246,3
    2,225,255,2114
0D  400 DATA208,6,76,102,254,76,
    114,254,32,231,255,169,112,1
    41,24,3,2057
45  410 DATA169,203,141,25,3,169
    ,124,141,4,3,169,165,141,5,3
    ,169,1634
54  420 DATA7,141,134,2,160,0,18
    5,203,204,240,7,32,210,255,2
    00,76,2056
E2  430 DATA171,203,169,13,32,21
    0,255,169,1,141,134,2,234,23
    4,120,169,2257
```

```
9A  440 DATA31,141,13,220,141,13
    ,221,173,13,220,173,13,221,1
    69,69,141,1972
C0  450 DATA20,3,168,202,141,21,
    3,169,1,141,26,208,88,76,116
    ,164,1548
3B  460 DATA169,255,160,1,145,43
    ,32,51,165,165,34,24,216,105
    ,2,133,1700
F1  470 DATA45,165,35,105,0,133,
    46,76,94,166,0,76,225,204,52
    ,205,1627

24  840 DATA208,221,169,13,32;21
    0,255,160,2,76,255,205,32,66
    ,246,169,2319
0A  850 DATA13,32,210,255,76,121
    ,0,121,0,76,27,204,169,0,141
    ,115,1560
4E  860 DATA204,76,118,206,169,2
    ,141,115,204,76,118,206,169,
    1,141,115,2061
AA  870 DATA204,32,115,0,32,110,
    205,174,95,206,134,187,172,9
    6,206,132,2100
6D  880 DATA188,169,0,133,185,17
    3,115,204,41,1,166,43,164,44
    ,32,213,1871
4C  890 DATA255,134,45,132,46,32
    ,89,166,32,51,165,32,183,255
    ,41,191,1849
E1  900 DATA240,14,201,16,240,5,
    162,29,76,136,227,162,28,76,
    136,227,1975
68  910 DATA173,115,204,201,2,24
    0,3,76,134,227,169,0,32,144,
    255,32,2007
00  920 DATA142,166,76,174,167,3
    2,115,0,32,110,205,174,249,2
    06,134,187,2169
A0  930 DATA172,250,206,132,188,
    169,0,133,185,141,115,204,16
    2,2,216,56,2331
29  940 DATA198,45,176,2,198,46,
    202,208,246,173,115,204,166,
    45,164,46,2234
CE  950 DATA76,147,206,76,27,204
    ,0,32,115,0,32,110,205,174,2
    9,207,1640
B5  960 DATA134,187,172,30,207,1
    32,188,169,1,133,185,169,43,
    166,45,164,2125
4E  970 DATA46,32,216,255,76,61,
    205,76,27,204,0,0,0,0,0,0,11
    98
8C  60000 SA=51781
B2  60005 EA=53023
6B  60007 SYS57812"DOSMAN",8,1
8C  60008 POKE194,(SA/256):POKE1
    93,SA-(PEEK(194)*256)
DE  60009 POKE175,(EA/256):POKE1
    74,EA-(PEEK(175)*256)
90  60011 SYS62957

B1  480 DATA96,205,104,206,112,2
    06,201,206,251,206,0,0,0,0,6
    4,47,1905
0D  490 DATA94,37,33,95,0,0,0,0,
    0,0,0,0,0,0,0,0,259
A6  500 DATA0,0,0,0,0,0,0,0,0,0,
    0,0,0,0,0,0,0
AC  510 DATA0,0,0,0,0,0,0,0,0,0,
    0,0,0,0,0,0,0
B9  520 DATA0,0,0,0,0,0,0,0,0,0,
    0,0,0,0,0,0,0
C7  530 DATA0,0,0,0,0,0,0,0,0,0,
    0,0,0,0,0,0,0
CD  540 DATA0,0,0,0,0,0,0,0,0,0,
    0,0,0,0,0,0,0
D0  550 DATA0,0,0,0,0,0,76,73,83
    ,84,13,0,76,73,83,84,645
```

– LOAD & RUN

< filename> – Load filename from current device into Basic memory and RUN it immediately afterward. If a *LODAD ERROR* occurs it will not be RUN. See above if in error.

% - VERIFY

% < **filename** > **-** Verify that program currently in Basic memory is the same as < filename > on disk in current dirve. If the verify is successful (they are the same), no message appears between *VERIFYING* and *READY*. If they are not the same you will get *VERIFY ERROR*.

! - APPEND

! < **filename** > **-** Since the KERNAL load routine is capable of LOADing to anywhere in memory, there's no reason why we can't include this very powerful utility. Armed with the ! command it is now easier to create a library of Basic program modules, or to write a program in pieces, each tested and debugged individually, as this saves time and is more convenient, and is less confusing. It also encourages structured programming, writing each piece of a program as a subroutine. The important thing to remember about APPENDing though is that you must ensure that the next block of Basic text appended has higher line number than that already in memory. It won't prevent it being loaded but the interpreter can't access the lines above the point where lower numbers are found. If a *LOAD ERROR* occurs, then you've got a slight problem – the append process starts by decrementing the Basic variables pointer *VARIAB* by two, to bring it in line with the true end of the program in memory and to use it as a starting address. If the load failed and APPEND is re-attempted, *VARTAB* is further decremented by two. If at the second attempt the load was successful, the the new date will crash over the end of the already existing program. To prevent this re-define *VARIAB* with the **OLD** routine, before re-attempting APPEND.

- SAVE

< **filename** > **-** Save program in memory as filename to current drive. The DOS error message follows automatically. If the save failed it could well be *FILE EXISTS* for example. Note *VARTAB* is used to indicate where the end is. If its value has alterend for any reason (actually a surprisingly common occurrence, and not just through using non-standard methods like programmed APPEND) then either not all of the program will be saved (*VARTAB* fails short) or some of the variable storage area will be saved with it. Ever loaded a program, RUN it and have it crash? On LISTing it's found to have turned into gibberish? This is the kiddie at fault. The **OLD** routine will make it toe the line through.

Warning

All of the LOAD, LOAD & RUN, VERIFY and APPEND functions have the effect of redefining *VARTAB*. This is done correctly unless an error occurs. If for example a verify fails, *VARTAB* will end up reflecting the point where the end of the program verified on disk would have been if it had been loaded, and not where the program in memory is now. If a LOAD failed then it will have a stupid value, like an address in zero page memory (eek!). But good old **OLD** will come to the rescue. Also all LOAD, VERIFY and APPEND processes rechain BASIC lines and perform an automatic CLR on completion.

The Function Keys

Ignored in program mode after RUN (normal ASCII value intact for program), but not after [STOP] and CONT have been used, nor if GOTO used instead of RUN.

F1 prints LIST[RETURN]
LIST all of program in memory from start.

F2 prints LIST[SPC]
Prints LIST and waits for line number(s) to be added.

F3 prints RUN[RETURN]
RUN program in memory from start.

F4 prints GOTO[SPC]
Prints GOTO and waits for line number to be added.

F5 prints CONT [RETURN]
Since a single press of the [STOP] key causes the interpreter to break out of the program to direct mode while running, why not also have a single key press to make it CONTinue where it left off?

F Prints SYS52197[RETURN]
Run the **OLD** routine.

F7 Prints SYS51951[RETURN]
Switch **TRACE ON**. This powerful debugging aid has the effect that whenever the interpreter comes upon the beginning of a fresh Basic line to be processed (not one it's doing already) the Basic line number will be printed on the screen and enclosed in square brackets. While running the program the screen will pretty soon fill up with numbers, displayed across the screen continuously (not on separate lines). The process can be slowed using [CTRL] or stopped with the [STOP] key, such that the line numbers can be examined to see which bits of the program are being executed, including those which are but shouldn't be, and those which should be but aren't will be conspicuous by their absence. It will show you where the program is getting stuck in an endless loop, for example.

TRACE ON is also active in direct mode, and any Basic commands used in direct mode will be preceded by a rubbish number, but this doesn't matter, it doesn't prevent normal use.

F8 Prints SYS51954[RETURN]
The line **TRACE** utility is switched **off**.

The Custom NMI

You may know that the [RUN/STOP][RESTORE] keys cause a Non-Maskable Interrupt and produces a *warm start* to Basic. They usually have to be used where [STOP] alone won't work, like where the MPU has got lost in a machine code routine, or if a peripheral has hung up (thus also hanging up the C64), and even for getting out of a Basic INPUT loop to direct mode. The 'warm start' includes restoring certain vectors and resetting the memory map to ensure both ROMs are accessible, which is fair enough, but it also clears the screen and resets it to its default blue colours, which is a nuisance if you still want to see the text that was on it and if the colours have been re-defined by your

```
51   560 DATA32,0,82,85,78,13,0,7
     1,79,84,79,32,0,67,79,78,859
A5   570 DATA84,13,0,83,89,83,53,
     50,49,57,55,13,0,0,0,0,629
15   580 DATA0,0,0,32,138,173,76,
     247,183,0,0,123,204,135,204,
     146,1661
2E   590 DATA204,217,202,129,204,
     140,204,152,204,227,202,0,0,
     0,0,0,2085
04   600 DATA0,0,0,0,0,0,13,73,78
     ,84,69,82,82,85,80,84,730
4E   610 DATA69,68,0,0,0,0,0,0,0,
     75,243,204,162,2,189,222,123
     5
19   620 DATA204,149,124,202,16,2
     48,165,186,141,119,204,76,11
     2,203,133,166,2448
F3   630 DATA134,167,186,189,1,1,
     201,230,240,4,201,140,208,23
     ,189,2,2116
01   640 DATA1,201,167,240,4,201,
     164,208,12,165,166,162,5,221
     ,19,204,2140
4E   650 DATA240,17,202,16,248,16
     5,166,166,167,201,58,176,3,7
     6,128,0,2029
72   660 DATA76,138,0,138,24,42,1
     70,189,4,204,72,189,3,204,72
     ,96,1621
56   670 DATA32,115,0,240,3,76,92
     ,205,173,119,204,133,186,32,
     180,255,2045
D2   680 DATA169,111,133,185,32,1
     50,255,32,165,255,32,210,255
     ,201,13,208,2406
CB   690 DATA246,32,171,255,76,12
     1,0,201,35,240,88,201,36,240
     ,118,201,2261
43   700 DATA88,240,96,32,110,205
     ,76,133,205,160,0,32,121,0,7
     6,121,1695
B6   710 DATA205,32,165,205,240,7
     ,153,27,204,200,76,118,205,1
     32,183,96,2248
EB   720 DATA165,186,32,177,255,1
     69,111,133,185,32,147,255,16
     0,0,185,27,2219
24   730 DATA204,32,168,255,200,5
     6,196,183,144,244,32,174,255
     ,76,121,0,2340
1C   740 DATA230,122,208,2,230,12
     3,162,0,161,122,56,233,48,56
     ,233,208,2194
5A   750 DATA96,234,234,32,115,0,
     32,168,204,165,20,141,119,20
     4,133,186,2083
EB   760 DATA76,121,0,169,201,133
     ,124,169,58,133,125,169,176,
     133,126,76,1989
D4   770 DATA116,164,76,27,204,32
     ,110,205,174,216,205,134,187
     ,172,217,205,2444
9C   780 DATA132,188,169,96,133,1
     85,32,213,243,173,119,204,32
     ,180,255,165,2519
5D   790 DATA185,32,150,255,169,0
     ,133,144,160,3,132,183,32,16
     5,255,141,2139
B4   800 DATA121,204,32,165,255,1
     41,122,204,164,144,208,64,16
     4,183,136,208,2515
0C   810 DATA233,174,121,204,173,
     122,204,32,205,189,169,32,32
     ,210,255,32,2387
BB   820 DATA165,255,166,144,208,
     38,201,0,240,24,32,210,255,3
     2,225,255,2450
E2   830 DATA240,26,32,228,255,24
     0,232,201,32,208,228,32,228,
     255,240,251,2928
```

program. It would be nice if it were possible to simply force the machine to direct mode Basic and leave the screen alone, so that we can still read our printed variables, etc.

Did you know that the [RESTORE] key alone is the thing that generates the NMI? Normally nothing apparently happens, because the KERNAL routine handling the NMI first examines the keyboard to see if the [STOP] key is down. If it is, then the *warm start* is performed. If it's not, then no changes are made and the C64 carries on as though nothing had happened.

The first part of the custom NMI routine is a duplicate of that of the KERNAL NMI Handler, with the difference that if the [STOP] key check is false then our custom interrupt is performed. If the [STOP] key is down then the resets are carried out by the KERNAL exactly as standard.

If the [STOP] key is not down then we get instead:

INTERRUPTED

READY.

INTERRUPTED is printed in yellow, READY., and all further text typed, in white. The screen remains intact and no drastic memory changes are made, other than the the custom NMI vector is refreshed (this isn't actually necessary, but the routine is also used to instal itself).

Try this.

POKE 49168,76:POKE 49169,16: POKE 49170,192.

Now **SYS 49168.**

What's happening now is that the C64 is trapped in an endless machine code loop. Tap [RESTORE] to bring it back. Note your POKEs are still on screen.

The OLD Routine

Of all the keywords the C64 hasn't got, the one it could really do with is **OLD. OLD** is the opposite of **NEW**, but as hinted beforehand, it's not just a means of recovering a listing that has been NEWed by mistake. Whether NEWed or not, it effectively *cleans up* a Basic program in memory by re-chaining it and redefining its pointers. It doesn't seem likely that these should be corrupted but it can happen in the process of constant test running and re-editing, and particularly where lines are added or deleted without typing CLR first. In these circumstances it is possible for poor old *VARTAB* to get a bit confused, resulting in the interpreter trying to make sense out of something which is actually a variable, or a large chuck of rubbish appearing between the end of the program (actually terminated properly so it RUNs OK) and the variables, and which is SAVEd with the program! It's happened to me several times.

If NEWed, the listing hasn't actually disappeared. All that's happened is the first two bytes of its storage have been zeroed, and two zero bytes in a position where a pointer to next BASIC line should be mean end of program. The "**OLD**" routine inserts a dummy value in these, which doesn't matter as the BASIC rechain routine is then called to sort it out.

It gets better. Try this – load a program with / filename and press the reset button if you have one, or else type **SYS 64738** (ensuring that the machine will reset in standard form). Either of these actions simulate a 'cold start', what you get when you switch on the C64. I bet you think everything has been wiped out, don't you? Not so. It's true that one of the functions of the 'cold start' is to perform a memory test, but this is of a non-destructive nature and in any case is only used to find out where the Basic ROM is so that the top of Basic memory can be defined. In actual fact the only way to erase the memory completely is to switch the machine off.

Now type **SYS 52197.**

Look, you didn't get a 'warm start' (like [RUN/STOP][RESTORE]) so the **OLD** routine is still there. Now **LIST**. Hey presto, the Basic program is still there too! Now you can get out of major problem with the reset button and not lose everything.

So that's *DOSMAN* et al. It's highly probably that you may quickly feel helpless without it. I know I am.

DOSMAN Memory Map

$CA45	51781	DOFUNC
$CAC4	51908	PUTKEY
$CADA	51930	FLIST2
$CAEF	51951	TRACON
$CAF2	51954	TRACOF
$CB01	51969	ONMSG
$CB0C	51980	OFFMSG
$CB48	52040	OUTMSG
$CB5A	52058	TENTRY
$CB70	52080	NMICUS
$CBE5	52197	OLD
$CC00	52224	DOSMAN
$CC03	52227	VECTAB
$CC13	5224	COMTAB

Entry for custom IRQ. Test if function key down, and process as necessary. If not service IRQ as normal.

Copy string pointed to by x, y into keyboard buffer until closing '0'.

"SYS51951[RETURN]"0';

"SYS51951[RETURN]"0'.

SYS here for [TRACE ON].

SYS here for [TRACE OFF].

"[TRACE ON]"0.

"[TRACE OFF]"0.

Print string pointed to by x, y till closing '0'.

Display BASIC line No. while "[TRACE ON]".

Instal/refresh/perform custom NMI.

$CBC3 52163 **IRQCUS** Instal/refresh custom IRQ for function keys.

SYS here for "OLD" routine.

SYS here for install DOSMAN, custom NMI and function keys.

Primary DOS command jump table.

List of primary DOS commands.

$CC1B	52251	**BUFFER**	DOSMAN input buffer.
$CC73	52339	**FLAG**	Mode flag for LOAD/LOAD & RUN/VERIFY APPEND.
$CC77	52343	**DEVICE**	Copy of current device number.
$CC79	52345	**Temporary storage of disk directory sector count.**	
$CC7B	52347	**BASTAB**	"LIST[RETURN]"0; "LIST" 0; "RUN[RETURN]"0; "GOTO" 0; "CONT[RETURN]"0; "SYS52917[RETURN]"0.
$CCA8	52392	**GETVAL**	Get numeric value from BASIC line into $14 – $15 hex.
$CCB0	52400	**FLIST**	Table of BASTAB address pointers.
$CCCB	52427	**NWIWRD**	"INTERRUPTED"0.
$CCDE	52446	**CODE**	Storage of code to wedge CHRGET.
$CCE1	52449	**INSTAL**	Wedge CHRGET and instal DOSMAN.
$CCF3	52467	**ENTRY**	CHRGET jumps here to test for DOS commands.
$CD35	52533	**COMM**	Process recognised primary DOS command.
$CD3D	52541	**GETERR**	Get and display current device error message
$CD68	52584	**SENDCM**	Send command string in buffer to current device.
$CD6E	52590	**READ**	Input BASIC line into buffer.
$CDA5	52645	**GETCHR**	Just like CHRGET, but doesn't ignore colons.
$CDBA	52666	**CHADEU**	Change current device number in memory.
$CDCA	52682	**RESTOR**	Restore CHRGET to normal, disables DOSMAN.
$CDDC	52700	**GETDIR**	Get and display disk directory from current device.
$CE61	52833	**LOADL**	Load BASIC prog.
$CE69	52841	**LOADR**	Load and run BASIC prog.
$CE71	52849	**LOADU**	Verify BASIC prog.
$CEA0	52896	**LOAD/ LOAD & RUN/ VERIFY/ APPEND error handling.**	
$CECA	52938	**APPEND**	Append BASIC prog. to memory.
$CEFC		**SAVE**	Save BASIC prog. in memory to current device.

RESET CIRCUIT

Make your own reset circuit easily and cheaply

By B. Leerkotte

One of the most infuriating design faults of the C64 is that Commodore omitted a reset button. If you do not own a suitable cartridge, you are constantly at the mercy of power surges and power lapses. How many times have you 'lost' that all important program (the one that you have not bothered saving yet)? If you are one of these unfortunates, then this article is for you. I will show you how, with a little effort, you can build your own.

The reset is achieved by pressing the restore key for approximately 5 seconds.

The circuit must be installed in the RE-circuit which normally triggers the reset-timer U20. The circuit replaces the resistor R50 (1mhz).

The theory

The moment that the Restore key is pressed, capacitor CR1 is charged by way of resistor RR3. The voltage on the trigger-input 8 of U20 will fall. When that voltage reaches the trigger voltage of 1.5V, the timer U20 gives a reset pulse.

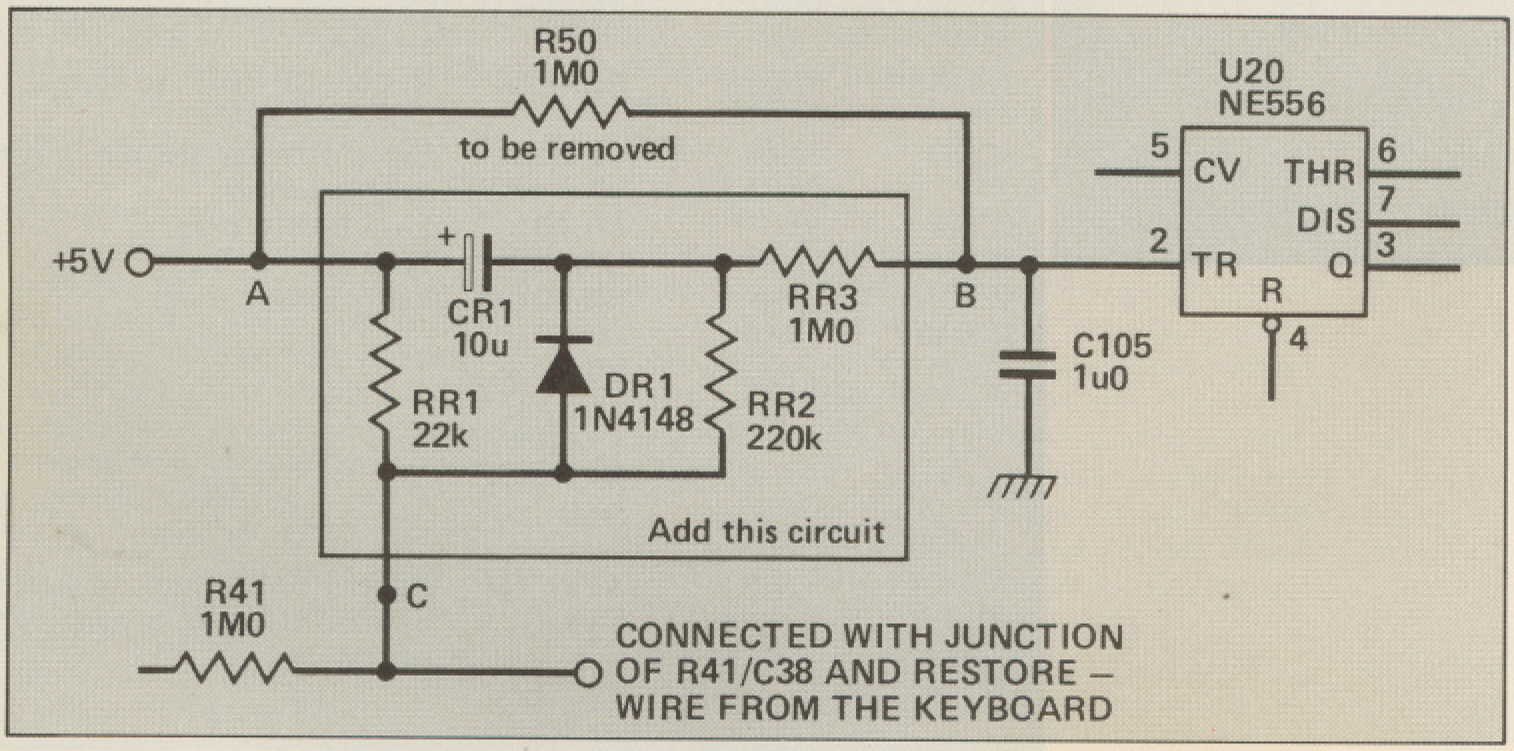
If the Restore key is released before U20 triggers, capacitor CR1 will be discharged rapidly in approximately 0.5 seconds. Therefore, it is impossible to reset the C64 by repeatedly pressing the Restore key; the Run/Stop-Restore Non Maskable Interrupt will function as before.

Installation

The circuit is reliable and is easy to build on a square-pad board. It is also easy to install into the C64.

Remove resistor R50 (1Mhz) and connect wire A to the left solderpoint which came free. Wire B is connected with the right solderpoint, (see diagram). Point C must be connected with the right side of resistor R41. Now point C is connected the Restore key.

You should now have a functional and reliable reset source.



WHIPCRACKAWAY

Commodore Crusader Kevin Crosby dons his hat and bullwhip to report on the latest installment in the Indiana Jones saga

Left: Indy (Harrison Ford) prepares himself for action. Life as an archaeologist is not all digging.



Above: Things hot up for messers Jones and Jones.

"Somehow the audience always seem to be able to go 'ugghh yukky-poo' whilst still keeping a smile on their faces."



Above: "Last one to the pub is a rotton turnip!"

Phew! I've just come back from my local (cinema, not pub – this time!) and what a film!

I am, of course, referring to the third and reportedly the final film in the Raiders series – Indiana Jones and the Last Crusade.

Once again Harrison Ford plays the slightly unorthodox Archaeologist cum Grave Robber who stops at nothing to claim the ancient treasures he seeks. This time though we have a second Dr Jones to deal with in the form of Sean Connery, who plays Indy's Father Henry.

'Crusade' fits in around the previous two films Raiders of the Lost Ark and Indiana Jones and the Temple of Doom. The first part is set in 1912 where a Boy Scout sized Indy (played by River Phoenix) has one of the first adventures in his career. These scenes do an excellent job in tying together some of the mysteries in Jones' past like his choice of bullwhip as his main weapon, his fear of snakes and the curious scar on his chin, etc. Nice touch that I thought.

The action soon works its way up to 1938 where the Harrison Ford-aged Indy reclaims the crucifix which was denied him 26 years previous, not for personal gain but for the good of the Institute that he teaches (how noble!). However events take a turn for the worse when Indy receives his father's notebook on the whereabouts of the Holy Grail – the famed chalice that gives the holder a prize even better than a year's subscription to *Your Commodore* – the gift of eternal life.

As this quest was his life's obsession Indy is understandably puzzled as to why his Father has sent it to him. Things soon fall into place when an American Art Collector by the name of Walter Donovan (played by English actor Julian Glover) informs Indy of his Father's disappearance and asks for his help in finding him by tracing the route mapped out in the notebook. There are, of course, some vital pieces of information missing which Indy must find out before he has a chance of finding his Father.

This initially takes Indy and his Curator Marcus Brody (played once again by Denholm Elliott) to the town of Venice where they meet up with Elsa, the token female in the film (played by the stunningly attractive Alison Doody) who once helped Jones the Elder on the same journey before his kidnap. And, as is customary in an Indy film, gruesome scenes involving creatures which many would not exactly trade their Care Bears for (in this case Rats) are used, but somehow the audience always seem to be able to go "Uggh Yukky-Poo" whilst still keeping a smile on their faces. A quality present in little other that Spielberg films.

Anyway, one thing leads swiftly to another and Jones the Younger is off to the mountains of Austria to rescue dear old Dad and to help him fulfill his life long ambition – To find the Holy Grail.

Once father and Son are reunited they very quickly become one of the silver screen's most endearing family teams. You could certainly tell that both Sean Connery and Harrison Ford were really enjoying themselves whilst making this film. I expect to see more films, not necessarily in this series, with Ford and connery teamed up as they certainl work well together on screen.

Excellent performances too from Denholm Elliott and John Rhys Davies who both recreate their characters from the first film. Nice to see them back.

No prizes for working out that good triumphs over evil but in this sort of film you don't sit there wondering who will win just how they win.

As is to be expected the stunt work and set pieces are just as good, if not better, than their predecessor's although I have to admit that the special effects were more noticeable in this particular installment especially during the scenes involving the Zeppelin and the aerial dogfights.

However, that gripe aside, a positive thumbs up for Indiana Jones and the Last Crusade. It has succeeded to capture much of the atmosphere of the first film whilst not forgetting the humour that was much more prevailent in the second.

Messrs. Spielberg and Lucas deserve several dozen Brownie points plus a free subscription to *Your Commodore* (what each! – Ed) for their stirling efforts.

AMERICAN INDOOR SOCCER

Soccer in the states is mostly played indoors by six-a-side teams. Here's your chance to play, manage and coach in the American indoor league.

Mindscape – £14.99 Disk

THE American Indoor league is the only way to play soccer in the US but that doesn't mean that it lacks any of the skill or excitement of the 11-a-side game. In fact, it's faster and more tiring on the players, so it's just as well you can substitute at will to keep the action fast and furious. However, selecting subs is the only job for your in this game. You can also act as centre forward, goalkeeper, centre midfield and general manager.

At the start of your campaign the role of general manager is the most important as your squad is by far the weakest in your six team group and the twelve team league. If you're going to have any chance of reaching the end of season play-offs you must trade for new players. As you begin the game you have 250 trading points to either train your team or trade for a better player with a skill level nearer 80 or 100 which would be a lot better than your present average of 15 to 20.

On the field you must drible, tackle and shoot, as you would in any other football game, except that your forwards can head the ball and show off with overhead kicks although the play can be broken up by entirely random penalties, foiling even the best laid match plans.

Whenever there is a free kick or when the keeper gathers the ball, the coaches' screen appears which allows you to make substitutions and decide attack and defence tactics, ranging from passing to shooting for the forwards and all out defence or support the attack for the defence.

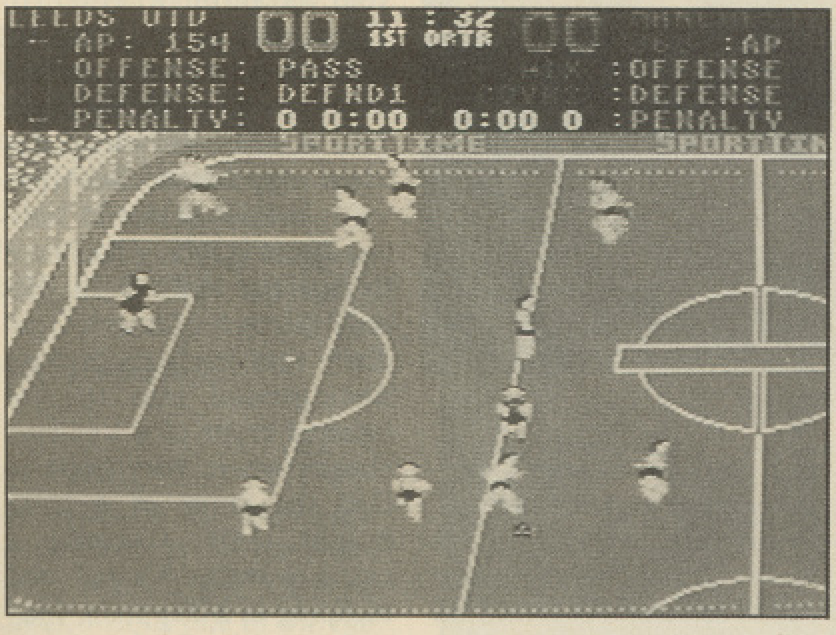
The game shows a lot of promise but it may all sound very familiar to you. Particularly if you've played Gremlin's Gary Lineker's Superstar Soccer, it uses exactly the same game mechanics. The only difference being the number of players on the pitch. This is because the game authors SportTime produced both games. It's a shame they didn't write two different games.

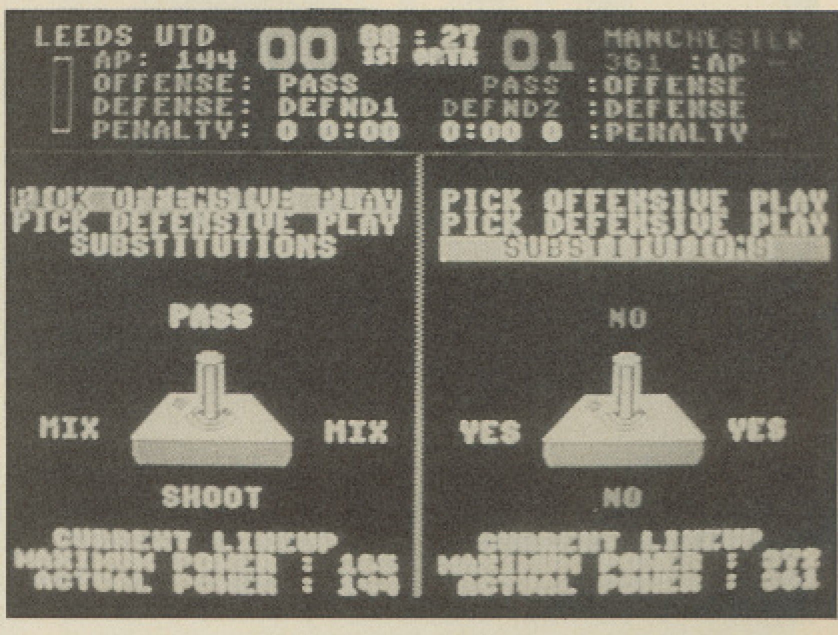
Tony Hetherington

SportTime, the games developers, also wrote Indoor Sports and Clubhouse Sports.

INFO

Gameplay: 50%
Graphics: 46%
Sonics: 35%
Lastibility: 40%
Overall:
43%





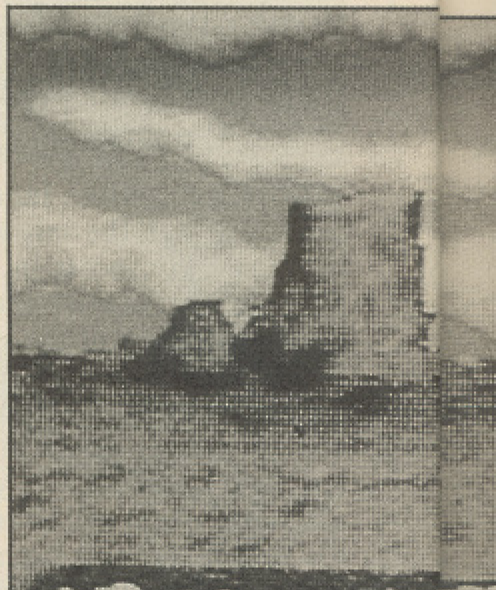
INDIANA J
THE LAST

The man in the hat is back again and this time he's brought his dad! That's how they trailed the latest adventure of Indiana Jones. Now it's a computer game.

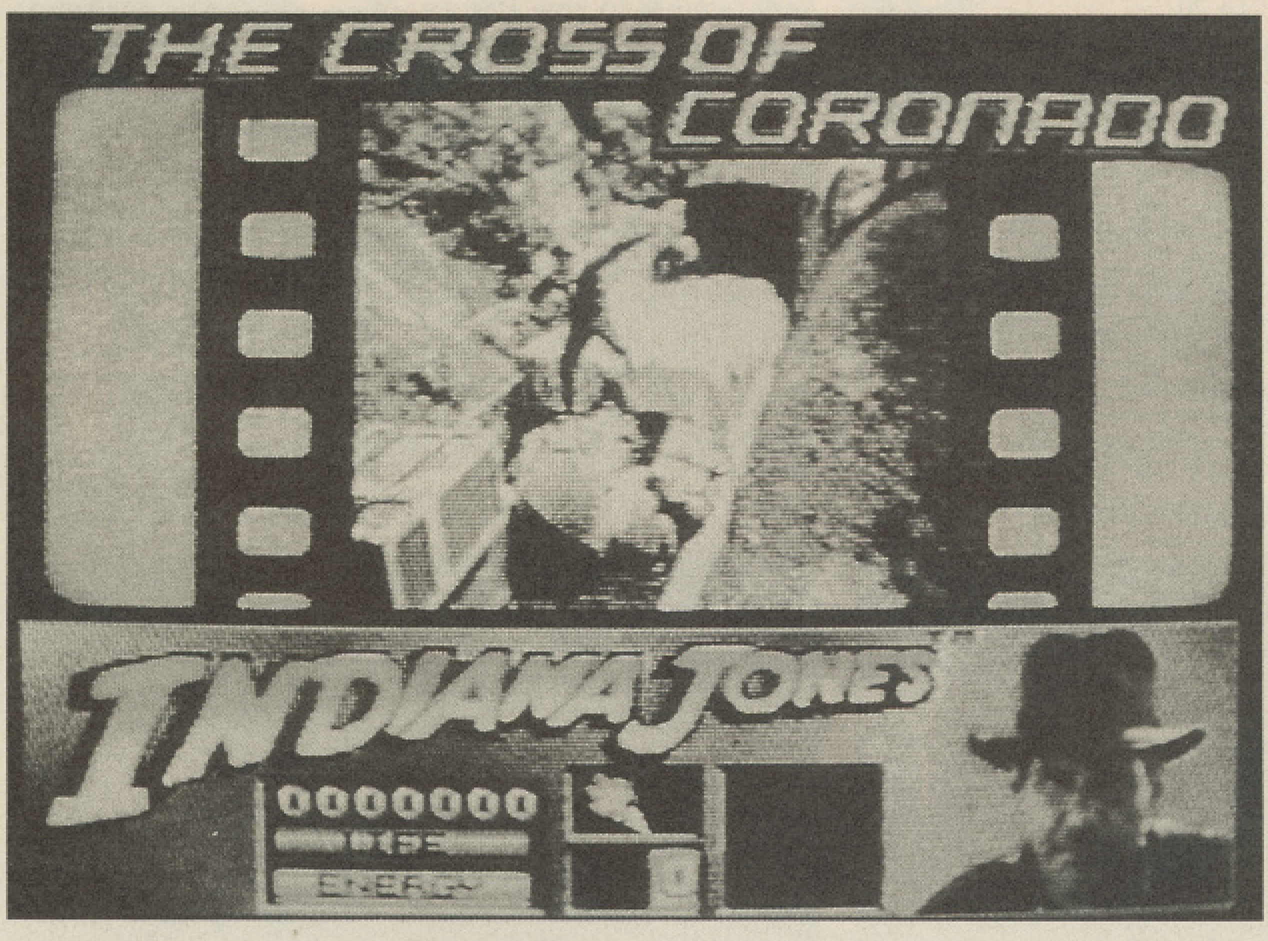
Lucasfilm (US Gold) - £24.99

INFO

Gameplay: 65%
Graphics: 60%
Sonics: 45%
Lastibility: 55%
Overall:
56%



Below: The cross of Coronado? Is that the same as the Maltese Cross?

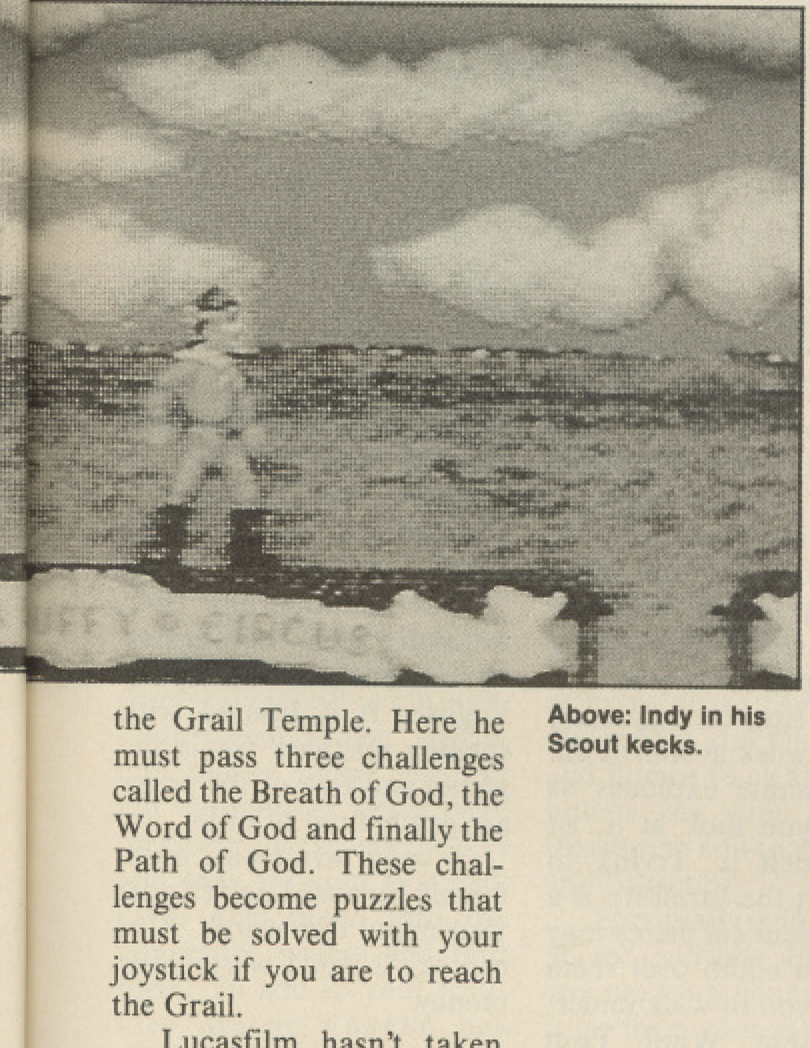


YOU'VE seen the film now play the game, that's the message from Lucasfilm as it launches a platform style arcade game for the Amiga, with other versions to follow shortly. This is, in fact, just one of two games that will be based on the film, the other being an arcade adventure produced by Lucasfilm.

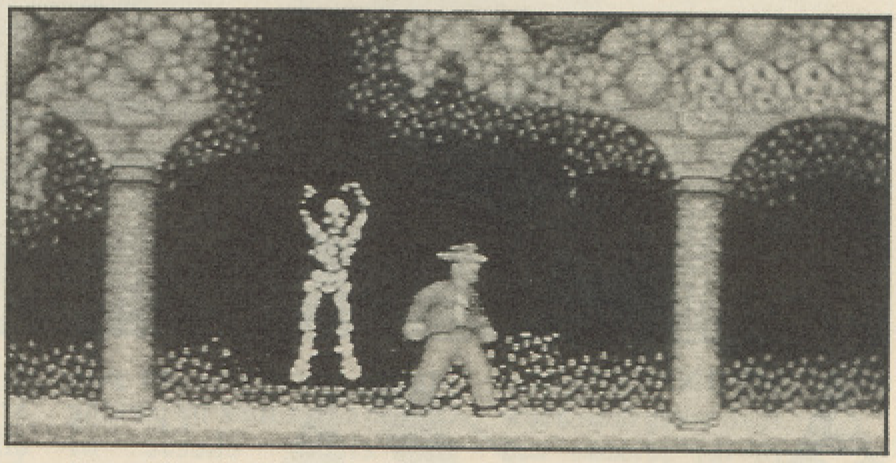
The arcade game is based on five sequences from the film and plots Indy's progress from a scout through to his final crusade for the Holy Grail. As the game opens he has just entered the mine complex in which thieves are stealing the silver cross of Coronado. While their backs are turned Indy grabs the cross and runs. On screen the caves are full of platforms, ropes to climb and bad guys armed with guns. If you're going to survive you'll need torches so you can see where you're going and whips to battle your way through to the exit. Then the chase continues on top of a circus train packed with really wild animals. This is where Indy learns to use a whip for the first time.

It is now 1938 and Indiana Jones is racing the Nazis to find the Holy Grail. His only clue is his father's Grail diary that leads them both underground into the rat infested crypt of a Venician church where they hope to find the grave of a Grail knight. After storming a castle to rescue his dad, and escaping in a Zeppelin, Indy arrives at the final and best part of the game as he enters

ONES AND CRUSADE

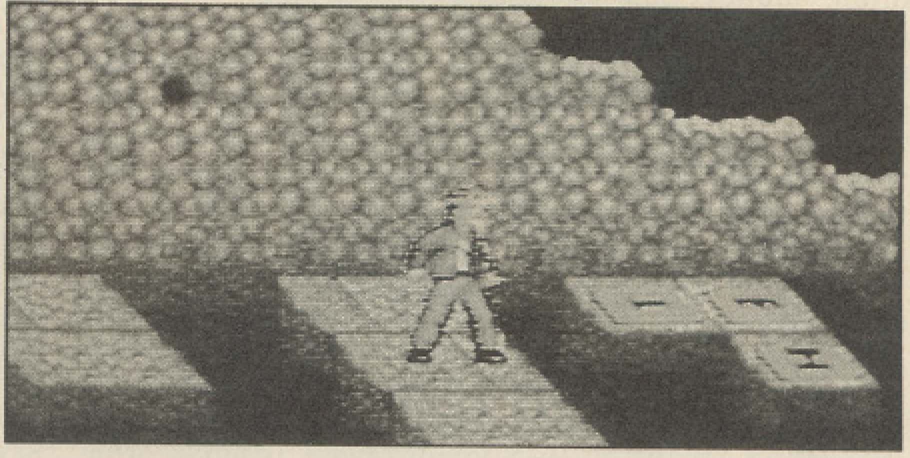


Above: Indy in his Scout kecks.



Above: Everybody's got skeletons in the closet.

Below: What an athletic fellow Indy really is.



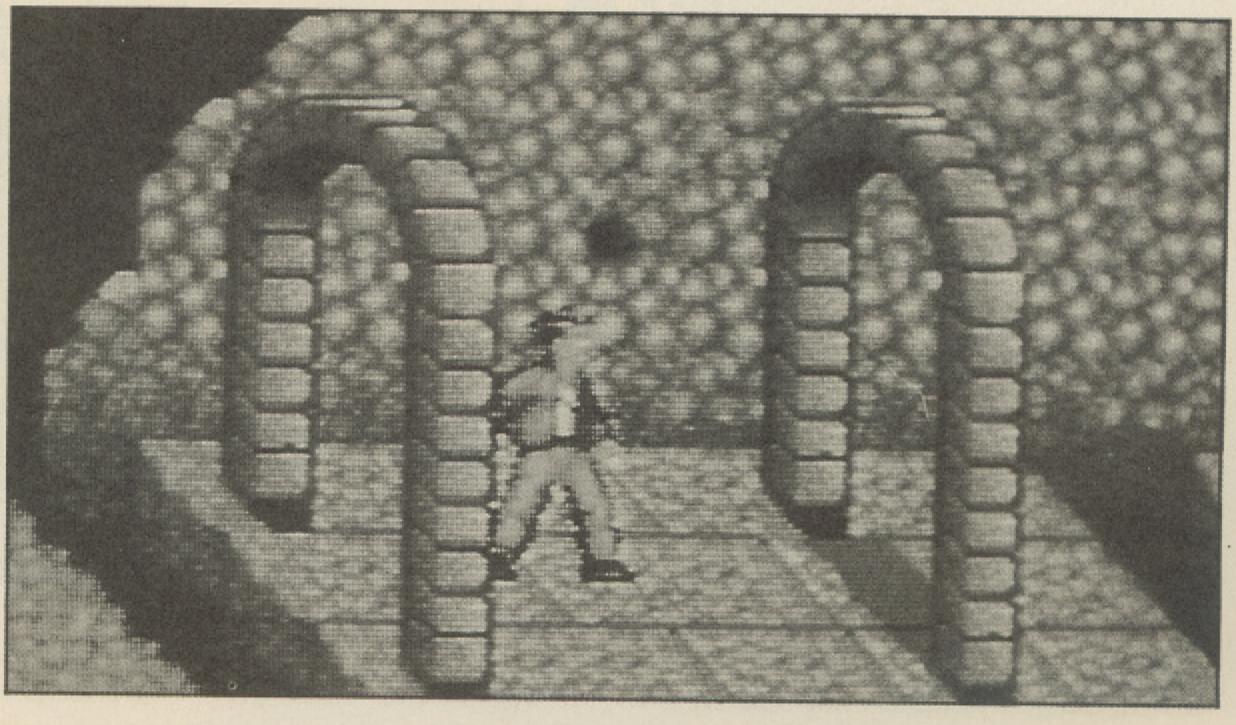
the Grail Temple. Here he must pass three challenges called the Breath of God, the Word of God and finally the Path of God. These challenges become puzzles that must be solved with your joystick if you are to reach the Grail.

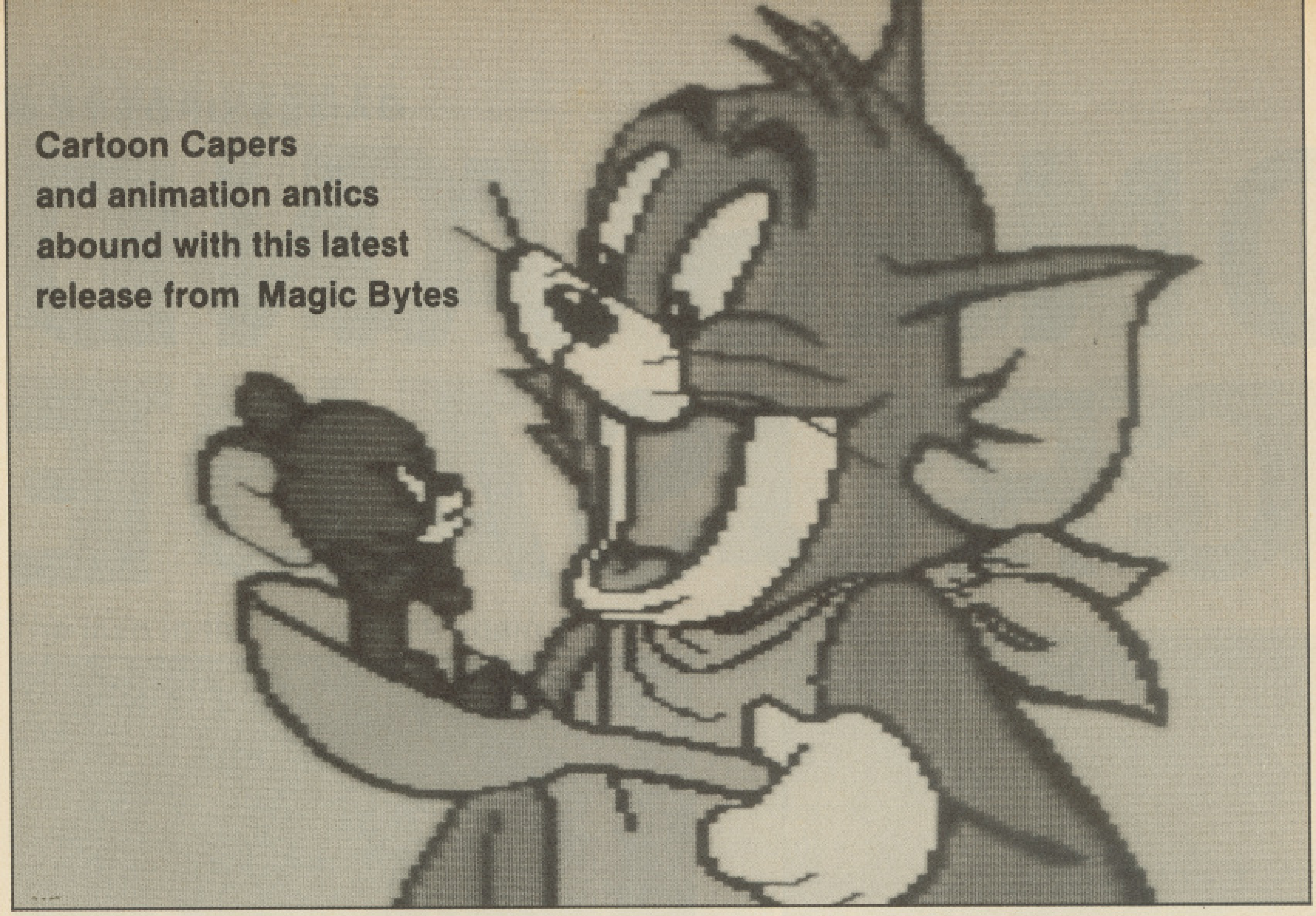
Lucasfilm hasn't taken any chances by using the tried and tested platform style of game but with the whip cracking action it seems to suit the style of the film. Add a reasonable rendition of the Indiana Jones theme and you've got a game that's a lot of fun to play.

Tony Hetherington

Lucasfilm *is the software production part of the company owned by George Lucas, who is one of the the movie mogules behind the film.*

Below: Underneath the arches!





Cartoon Capers and animation antics abound with this latest release from Magic Bytes

ANYONE who has read more than a few of my reviews will know that I have little time for licensed games. All too often, money that could usefully have been used in developing the product is spent on acquiring the rights to a film, television series or whatever. And the amounts that we are talking about are not peanuts.

The latest licensed title to come my way is Tom and Jerry from the German Company Magic Bytes and I am afraid that it does little to improve my above mentioned view. Just the opposite in fact.

The idea behind the game follows that of the cartoons reasonably well. Mouse goes looking for food. Cat sees mouse. Cat chases mouse. Cat catches mouse. Mouse escapes. Cat gets his comeuppance.

Here, Jerry is out looking for lumps of his favourite cheese, scattered around five different rooms. He has to collect as much as possible in the allotted time, bouncing of items of furniture in the manner of the platform days of old. The rooms are connected via a series of tunnels where you can gain or lose extra time by picking up either cheese or explosives.

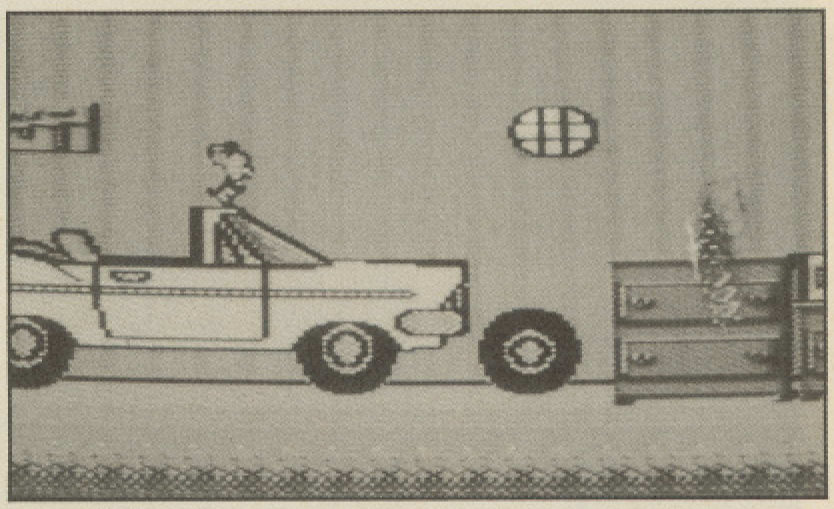
Tom on the other hand is doing his best to stop Jerry by grabbing him whenever he can causing Jerry to lose 30 seconds of his time allowance. Jerry can drop things on Tom's head to keep him quiet for a while or can distract him by, for example, turning on the television.

Jerry's favourite cheese is full of holes. Unfortunately, the gameplay suffers from a similar problem. To start with, there is no scoring system in the game. Apart from there being no incentive to play, you have no idea as to how well or badly you are doing. This in turn affects other elements of the gameplay. For example, it now becomes pointless to try to stop Tom. The time spent in setting up an 'accident' could better be spent trying to pick up more cheese.

The tunnel sequence does not work at well at all. The dynamite explodes as soon as you look at it, let alone touch it. Trying to jump past the furniture is a lottery. Identical pieces may make you climb over them or allow you to walk underneath them. When Tom catches you, you get repositioned randomly on the screen that you are on. It is quite possible that you will be put in a dead end and have to wait for Tom to come and kill you again – a wonderful bit of game design I don't think.

The manual has been translated from the German by someone who can't speak English. It is littered with spelling mistakes (so is the game) and two of the pages are printed out of order.

I can't write any more mainly because I don't know that many bad words. All I can say is don't waste your money.



Above: But Jerry you can't drive, you're only a mouse

Magic Bytes – £9.99 Tape, £14.99 Disk

INFO

Gameplay: 15%
Graphics: 55%
Sonics: 40%
Lastability: 20%
Overall:

33%



Above: You shall have a fishy...



Above: No, it's not Kaleidascope simulator!

At last, the cult film of the seventies that terrorised countless cinema audiences has now appeared on the computer screen.

Screen 7 – £9.99

THE summer season had come to Amity island and thousands flocked to its beaches unaware of the terror that swam just below the calm seas. A great white shark was now feeding in these waters and it was feeding on people.

At first they thought the victim's wounds were caused by boating accidents but now you, Brody – Chief of Police, the job of ridding the island of this menace. Together with Quint, a shark fisherman, Hooper, a shark expert, and three expert divers you set off to kill jaws. Unfortunately, the special gun and its bullets that will kill the monster shark were on a boat that struck the reef and sank, so your first task is to dive down into the dangerous waters and find them. To add to your troubles Mayor Vaughn has refused to close the beaches and hopes to cover it up until you kill the shark, but you must hurry, if seven swimmers are chomped you'll be sacked and the game will be lost.

One by one, your six divers climb into the diving bell and dive down into the depths of the reef to search for the four parts of the gun and the four super bullets that will kill Jaws. This isn't easy as the waters are teaming with hostile plants and fish out to eat you, if you think they're trouble just wait until you see Jaws. Luckily you'll also find useful objects to help you, such as extra air to top up your dwindling supplies, mines and bombs to clear caverns, bullets for your gun and treasure to add to your score and collection.

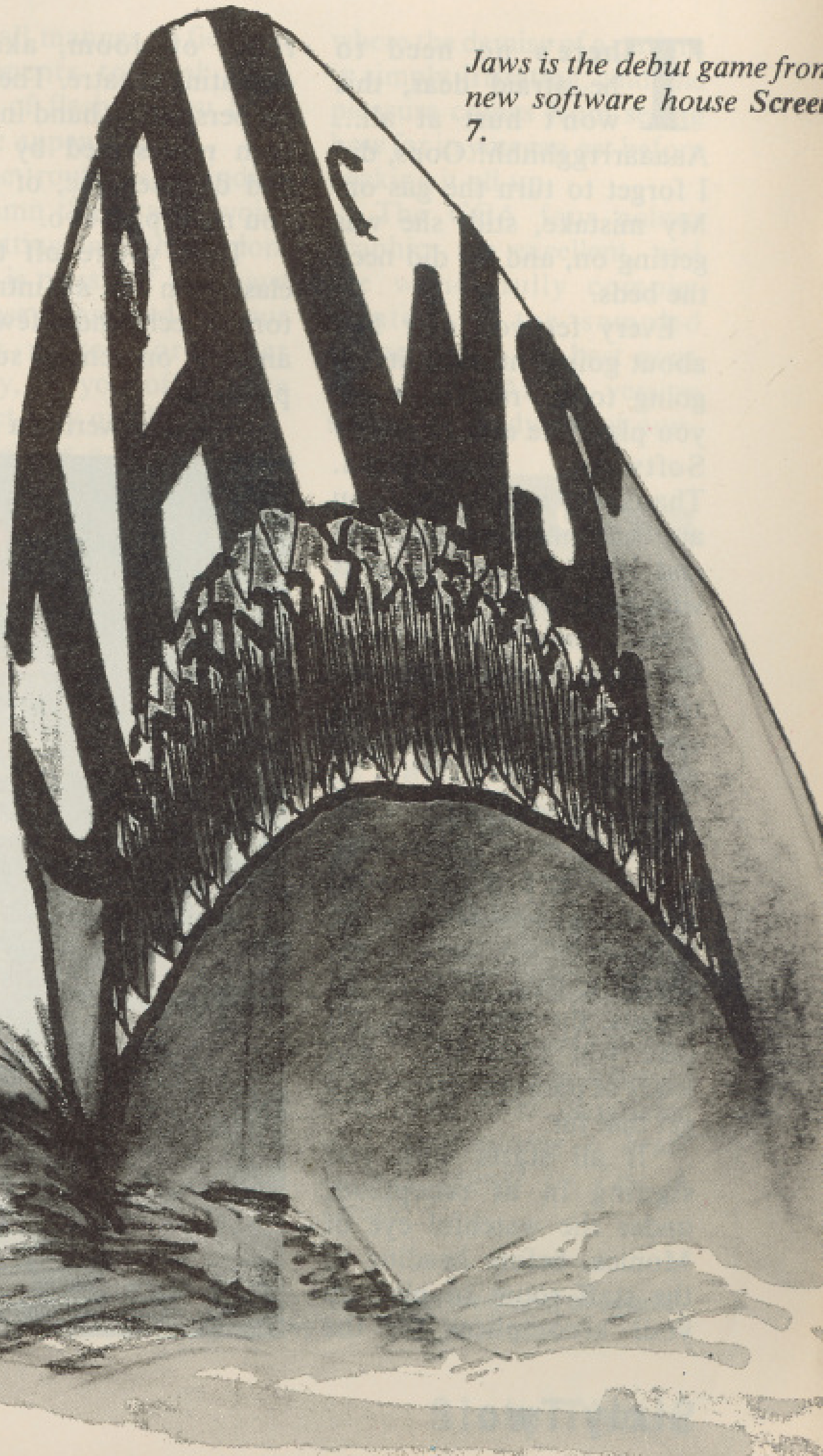
Eventually you'll gather all the gun bits and ammo you need but your challenge is far from over as you have score three hits on the great white shark or start all over again.

The game is quite fun to play but there's one thing I can't understand; why has Screen 7 gone to trouble of getting the rights to a film and then produce a game that has little to do with it?

Tony Hetherington

INFO

Gameplay: 65%
Graphics: 43%
Sonics: 38%
Lastibility: 64%
Overall:
53%



Jaws is the debut game from new software house Screen 7.

LIFE AND DE

Has the NHS fallen so low that they'd let a complete lunatic like Duncan Evans into the wards? Oh no, they have.

Mindscape – £29.95 Disc

There's no need to be afraid dear, this won't hurt at all... Aaaaarrrgghhhh! Oops, did I forget to turn the gas on. My mistake, still, she was getting on, and we did need the beds.

Every fer you ever had about going into hospital is going to be realised when you play Life and Death by Software Toolworks. Thankfully in this game you are that mad eyed surgeon, and it's the other patients who are there to suffer. And suffer they do, as you blunder through medical training, leaving the wards empty and the morgue packed.

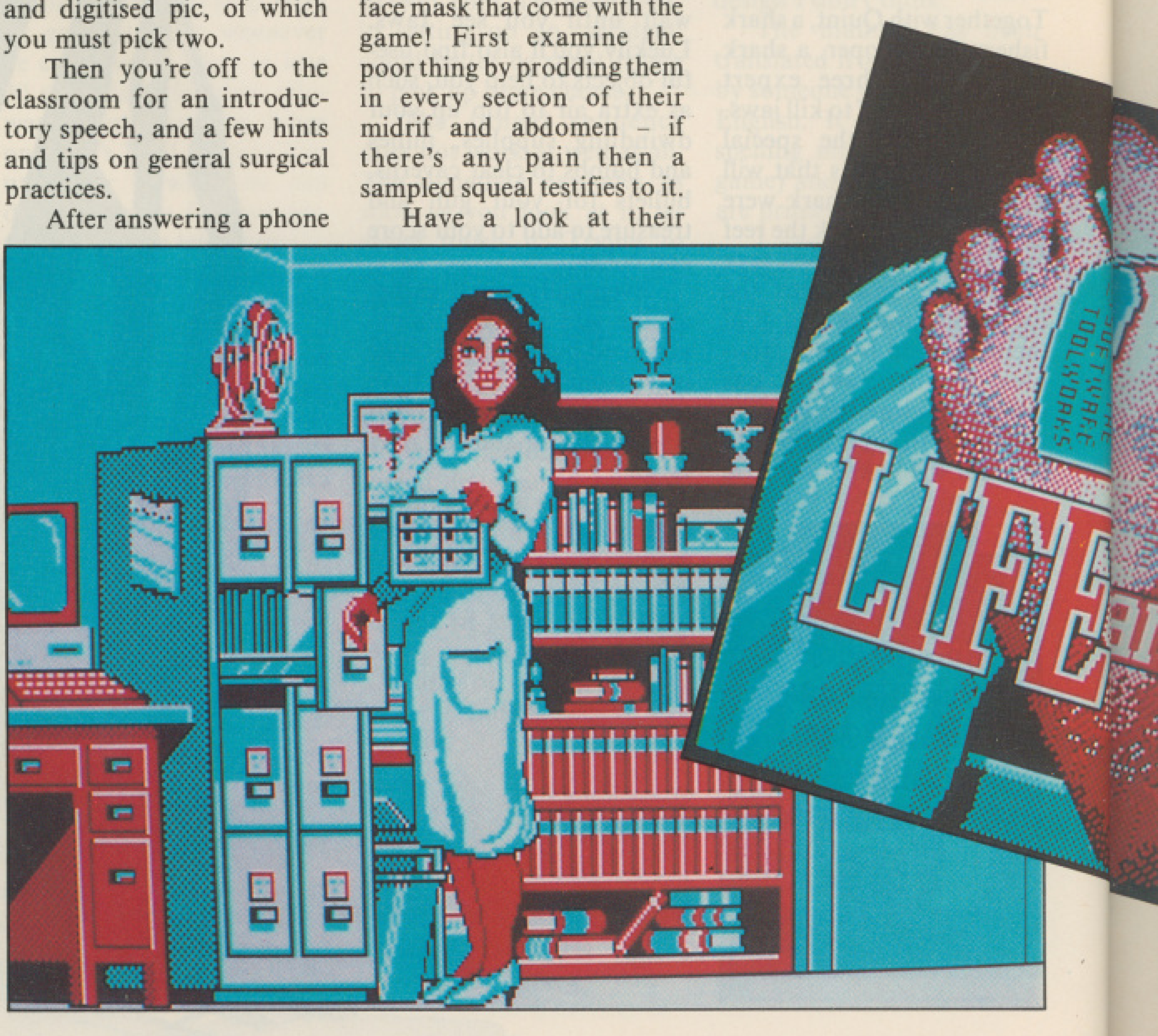
Life and Death is all about survery, progressing from being a naive scalpel apprentice, to mastering the appendectomy before assaulting that greatest of organs, the heart. Still, it'll take you some time, and loads of patients, before you get that far.

It all starts with you signing in at reception, under the watchful eye of Monica, before heading to the staff room to pick up your accomplices for the room of doom, aka the operating theatre. There are six persons on hand in total, each represented by a file and digitised pic, of which you must pick two.

Then you're off to the classroom for an introductory speech, and a few hints and tips on general surgical practices.

After answering a phone call, which doubles as the copy protection scheme, you get your first patient. Time to don the rubber gloves and face mask that come with the game! First examine the poor thing by prodding them in every section of their midrif and abdomen – if there's any pain then a sampled squeal testifies to it.

Have a look at their record chart and look up the symptoms, and decide whether to operate, administer antiobitocs, refer them



EATH

to another doctor, go to X-ray, observe or use the ultra scan. For the first half of a dozen patients you'll probably make the wrong choice and end up back in the classroom being told so. At least you'll know better next time, alas your victims never get a second opportunity.

Eventually you'll get a case where you have to operate, and this is where the real fun starts, as it involves injecting drugs to counter blood pressure loss and heart wobblies, setting up glucose and blood drips, and using all manner of fiendish implements to peel back layers of flesh as you head for the appendix.

The trouble is in finding the damn thing, and avoiding cutting into the Colon, which is messy. If you have a mouse connected to your PC is makes for easier surgery, as you often have to react very quickly.

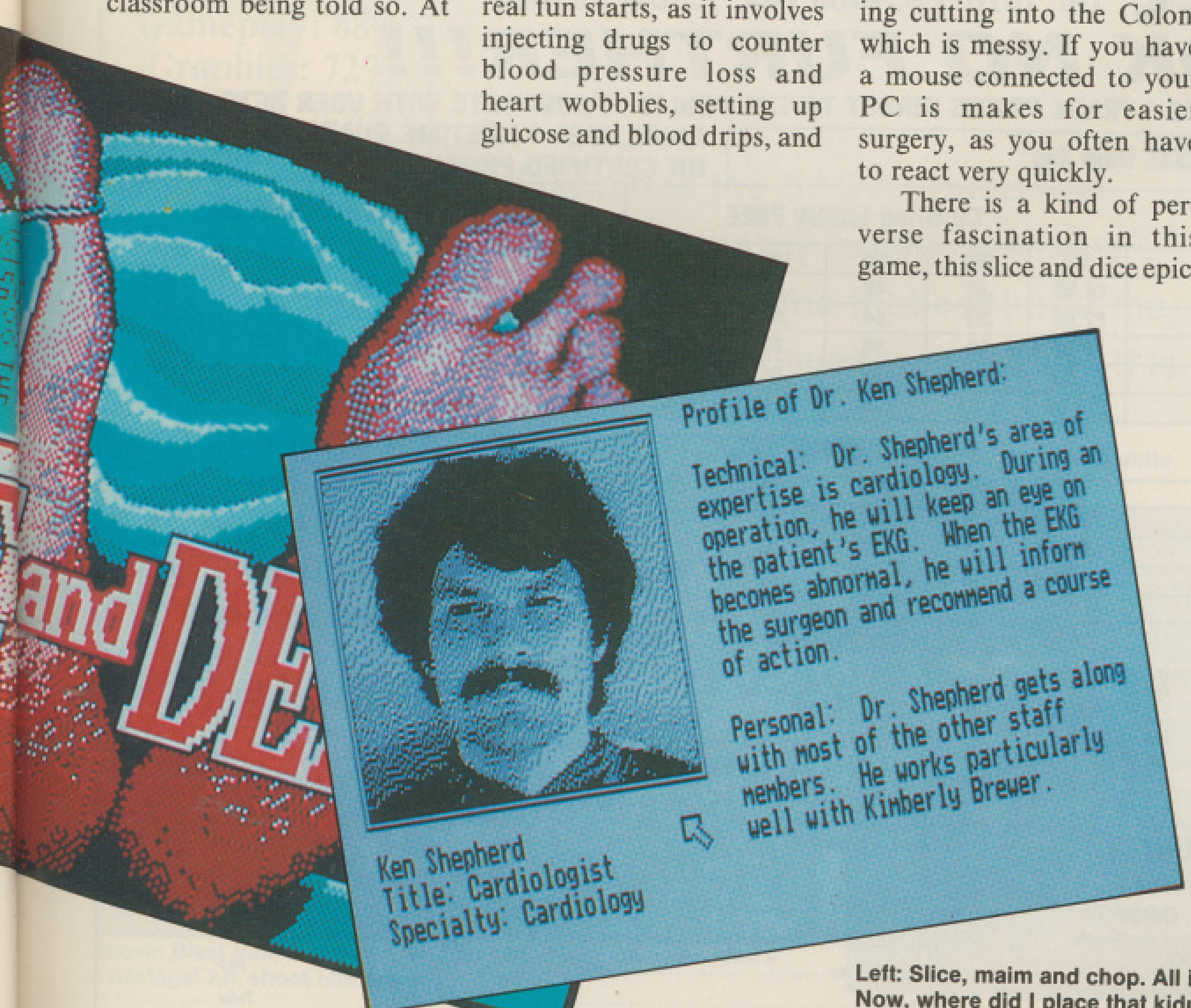
There is a kind of perverse fascination in this game, this slice and dice epic, where the demise of a patient is simply irritating, and the pleasure comes from seeing how far in you can get before cocking it all up.

The CGA four colour graphics are excellent, and are wonderfully complemented by the sampled screams, and the best news is that the Amiga version should be ready about now.

INFO

Gameplay: 87%
Graphics: 85%
Sonics: 73%
Lastibility: 80%
Overall:
86%

Software Toolworks is best known for its Chessmaster 2000 and 2100 programs, and is promising a brain surgery sequel to Life & Death.



Left: Slice, maim and chop. All in the name of medicine, of course. Now, where did I place that kidney?

POOLSWINNER II

THE ULTIMATE POOLS PREDICTION PROGRAM



- **MASSIVE DATABASE** Poolswinner is a sophisticated Pools prediction aid. It comes complete with the largest database available – 22000 matches over 10 years.
- **PREDICTS** Not just SCOREDRAWS, but AWAYS, HOMES and NO SCORES.
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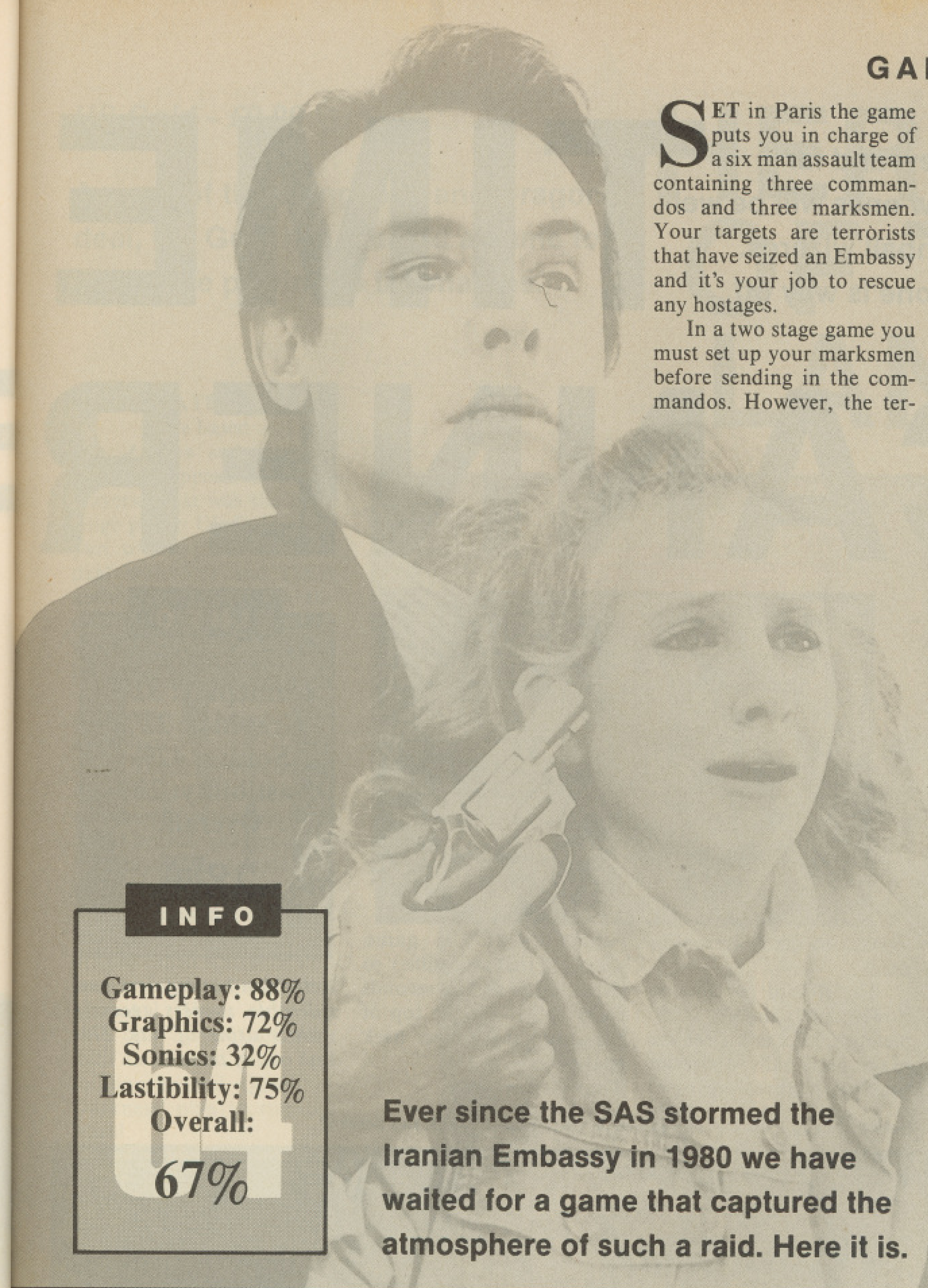
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HOSTAGES



SET in Paris the game puts you in charge of a six man assault team containing three commandos and three marksmen. Your targets are terrorists that have seized an Embassy and it's your job to rescue any hostages.

In a two stage game you must set up your marksmen before sending in the commandos. However, the terrorists have the surrounding streets covered with searchlights so your marksmen must run, crawl and dive in and out of any terrorists that come to the windows. However, you must be sure that they're terrorists and not hostages before you open fire. Once the immediate area is cleared you can send in the heavy mob.

The commandos enter the building by abseiling from the roof and smashing through the windows. They must then clear the rooms of terrorists. Inside, the screen changes to show a 3D view of the room or corridor you're currently in and a map that plots the terrorist's movement. Now you have to think quickly to gun down terrorists while avoiding any injury to the hostages. When you find a hostage you must escort him to a safe room on the third floor and protect them from terrorist attack by moving in more of your team. As in a real assault good tactics and the speed and skill of your team will decide the outcome. Perhaps the toughest challenge is when a terrorist is hiding behind his hostages. There you have to make your shots count and that will take some practice.

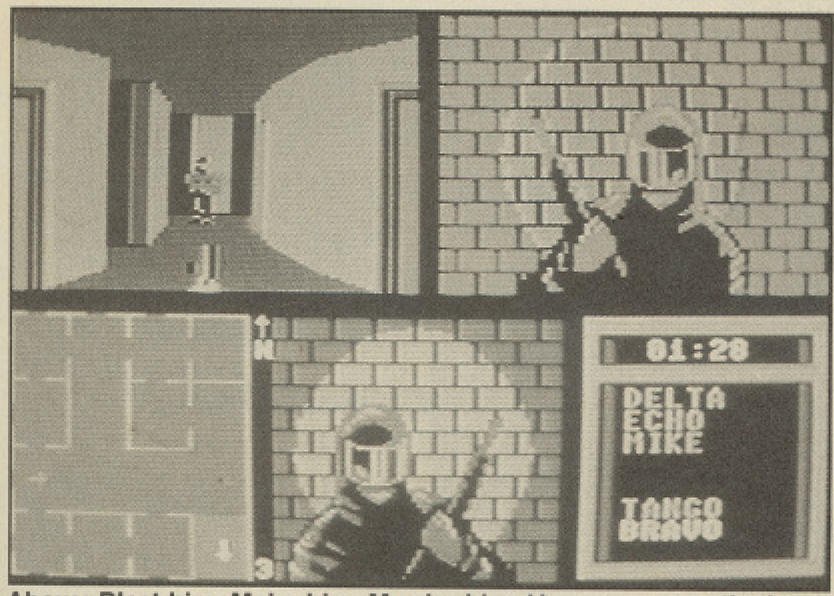
Several levels of difficulty and the ability to play either half of the game separately will ensure you'll keep coming back for more.

Tony Hetherington

INFO

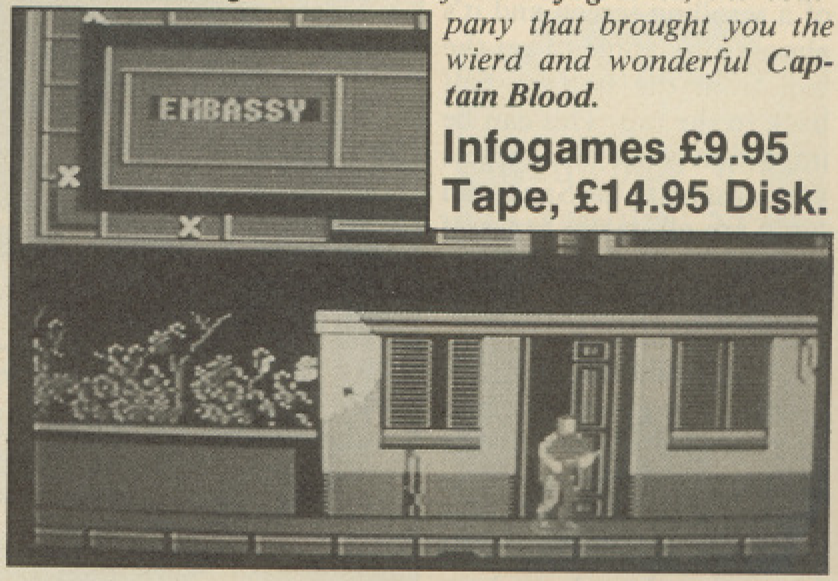
Gameplay: 88%
Graphics: 72%
Sonics: 32%
Lastibility: 75%
Overall:
67%

Ever since the SAS stormed the Iranian Embassy in 1980 we have waited for a game that captured the atmosphere of such a raid. Here it is.



Above: Blast him, Maim him, Murder him. Hang on a sec, that's a hostage! Ah, shoot him anyway...

Below: We'll have no cigarette adverts in this mag.



***Hostages** is the latest game from **Infogrames**, the company that brought you the wierd and wonderful **Captain Blood**.*

Infogames £9.95 Tape, £14.95 Disk.

Pinball games are few and far between, so any new ones will be welcomed by digital pinball wizards. Unfortunately, this one is way off target.

TIME SCANNER

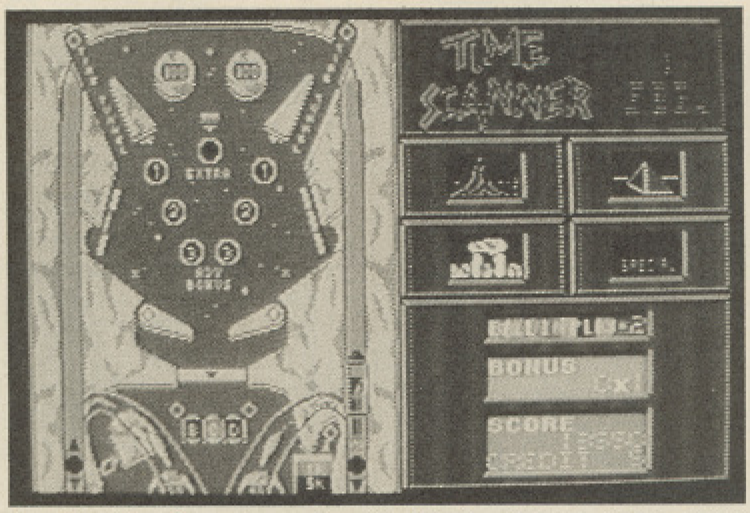
By Electric Dreams – £9.95 tape

TIMESCANNER is the long awaited conversion of the successful coin-op based on pinball. In the game you have inexplicably fallen into a time warp and the only way out is to complete four pinball tables. To add to your problems you have to complete three of them before you get a chance to play the fourth.

Each table has a theme and an objective. For example, on the Volcano table you must light up the letters in the word Volcano by hitting a transparent chute until finally the volcano erupts. Unfortunately, this makes the other targets, bumpers and rollovers quite redundant. The same is also true of the Ruins and Saqqarah (Egyptian) tables.

Another problem is that the tables are in two halfs of a scrolling screen and it's almost impossible to get the ball from the bottom half back to the top. This can be important since the targets you must hit in the Saqqarah table are all in the top half of the table; so are the two chutes that transport you to the other tables.

Unfortunately, things get worse as the game's graphics and speed are more in line with a 16K Spectrum game than a 64K C64 and the suspicion must be that all 8 bit versions have been developed with the Spectrum in mind.



The reward for finally, slowly and painfully completing a level is the release of two other balls so you can play with three at once (which slows the game down, if that's possible) so that it takes several seconds for a ball to hit the top of the screen and bounce back to the flippers.

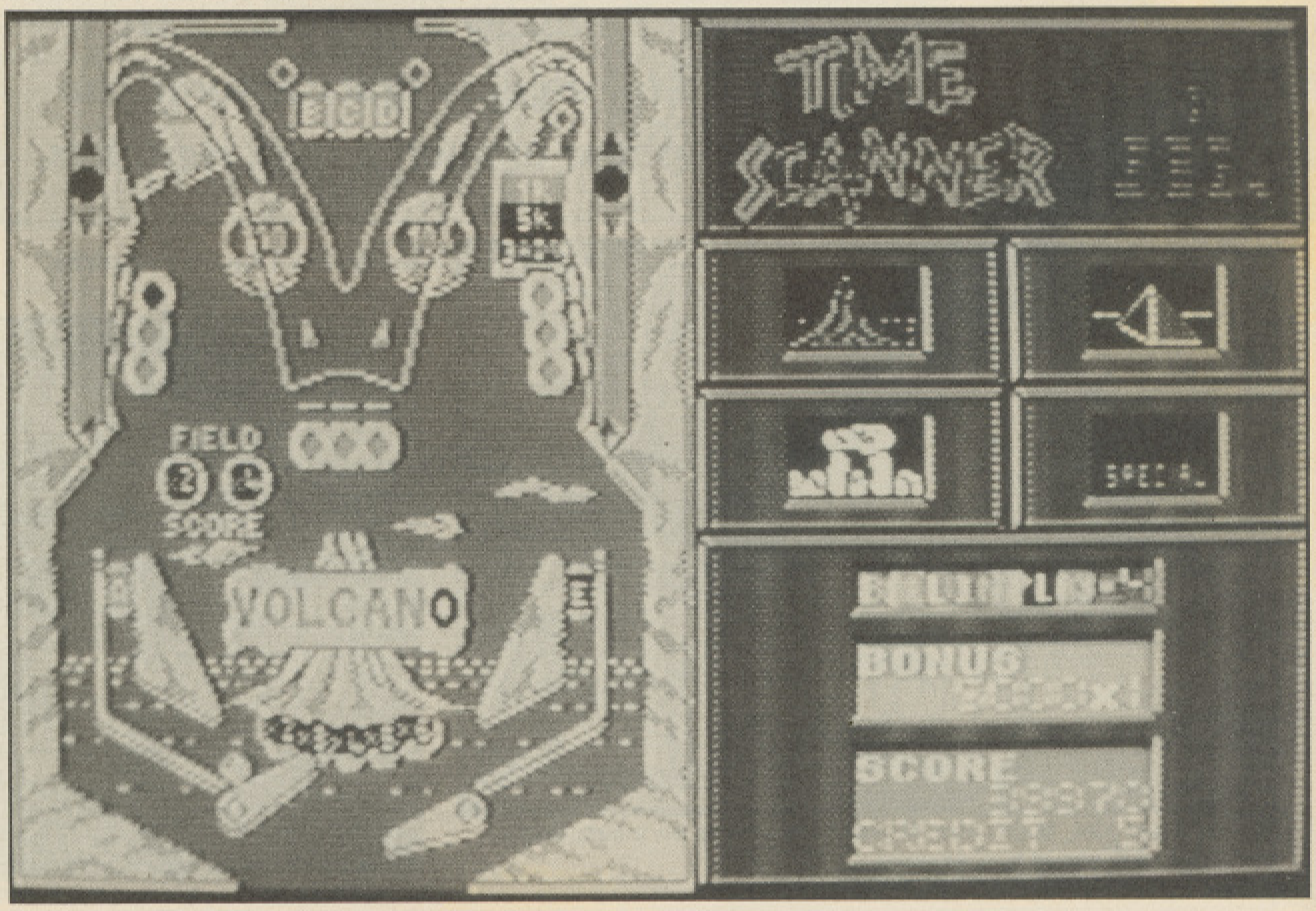
Tony Hetherington

INFO

Gameplay: 32%
Graphics: 22%
Sonics: 42%
Lastibility: 28%
Overall:
28%

***Activision** has enjoyed considerable success recently with a string of hits. This isn't one of them.*

Below: Do you think that this screen is, perchance, the Volcano Screen?



US Gold - £9.99

HEROES OF THE LANCE

As part of the Dungeons and Dragons deal, US Gold has created a game to bring role playing to the masses.

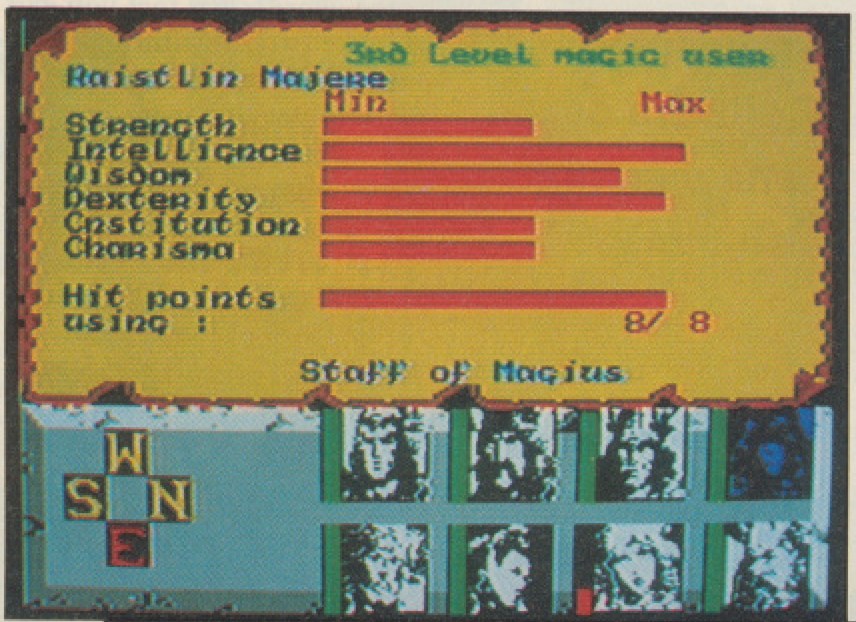
CREATE a computer game based on Dungeons and Dragons that will appeal to arcade players. That was the challenge put to US Gold as its part of the three cornered deal with SSI and D&D authors TSR. This is the result and it's a game that's played entirely with a joystick.

Unlike the other D&D games that are based on the Forgotten Realms, Heroes of the Lance is based on the Dragonlance series of books and game modules that came about because players of the role playing game demanded more dragons in Dungeons and Dragons. This game features an ancient black dragon called Khisanth who guards the platinum disks of Mishakal. These disks are your only hope of restoring faith in the old Gods and foiling the evil Queen of Darkness' plan to rule the world.

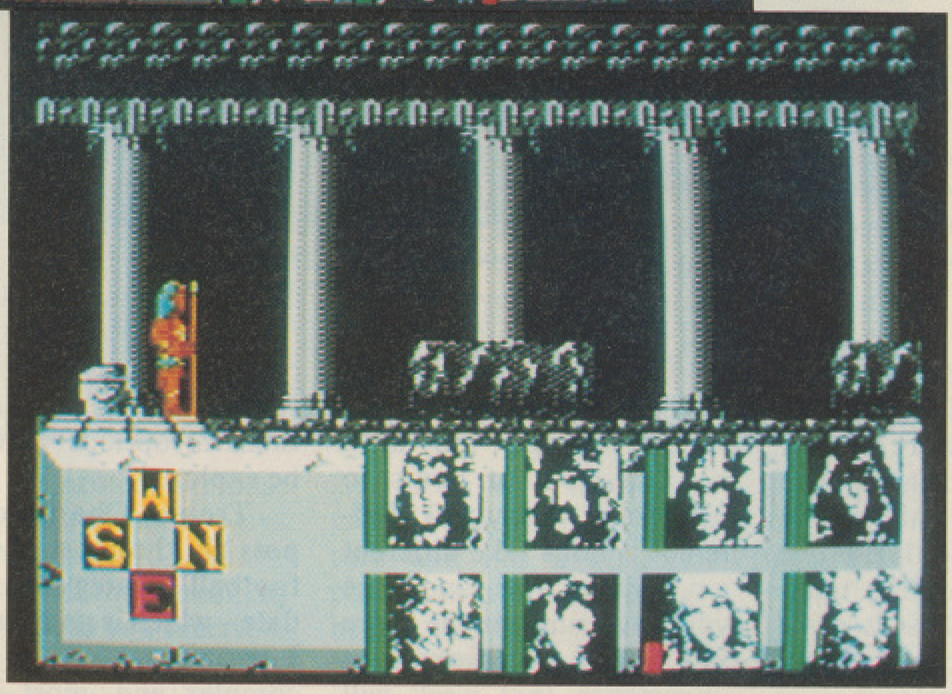
The Disks lie deep in the ruins of the Temple of Xak Tsaroth which is now rife with Gully Dwarfs, giant spiders, undead and Draconians (a human dragon half breed created by the evil Queen). You control eight brave adventurers although only one appears on the screen at anyone time. Your party has the usual mix of fighters and spell casters which, in this game, are given their spell power through two staffs. Raistlin is the magic user and holds the staff of Magius which has 100 charges and can cast spells such as sleep, magic missile and charm (sapping one charge) and web (for two). Goldmoon carries the clerical blue moon staff that has 200 charges and can cast spells ranging from the ubiquitous cure light wounds (1) to Raise Dead (5) and the useful deflect dragon breath (5).

The action takes place on a sideways scrolling screen with a compass that lights up when you reach a junction. This can be a little confusing, but since the game's in real time you haven't time to draw accurate maps. Combat is fast and furious, with joystick movements deciding whether you cut, slash or parry, or fire an arrow/crossbolt in a distance attach. Should you resort to magic then the space bar freezes the game and presents a series of menus from which you can cast spells, pick up, drop and use objects and examine and select heroes.

Tony Hetherington



Left: I wonder if the staff of Magius is as rowdy as the staff of Argus.



Below: Your Commodore – full of interesting columns.

INFO

Gameplay: 67%
Graphics: 55%
Sonics: 42%
Lastibility: 48%
Overall:
53%

64

TREBLE CHAMPIONS

Challenge Software – £9.95 Tape

And so the footy season starts again. To coincide with this momentous occasion, Challenge Software deals us a dose of soccer management to test even Kenny Dalglish himself.

Challenge Software's first title to come our way is Treble Challenge, a football management game that seeks to expand the foundations laid by Football Manager and, more recently, Football Director II. The latter game is a hard act to follow, and the only way to do so would be to better it in the tactical play. Challenge has succeeded this with a few features to increase the realistic aspect of games of this ilk.

The goal (no pun intended) in Treble Champions is a very familiar one; win the leage division one, the FA Cup and the League Cup (hopefully all in the same season) and thus prove what an outstanding manager you are. This is done by manipulating players, entering the transfer market to improve the quality of your team, and other daily chores performed by big team managers.

Players have skill levels, age, fitness and potential, all of which prove vital in determining results. The matches are played with the clock ticking away, and a table constantly shows how many times the ball was in each team's possession, the amount of shots and goals that a team has. They also show which player scored and in what minute.

The most unique feature of the game is the fact that you, as manager, only have a set number of hours to perform a weekly task. Different actions take different amounts of time, and once you have run out the more important decisions not undertaken that week will have to wait. Also new to the genre is the fact you can make two substitutions during a match, and so can your computer opponent.

Penalty shoot-outs are not often included in such strategy games, nor are two legs in League Cup competitions. Treble Champions boasts 4 divisions of 20 teams and even a non-league division of 20 teams. You can play on any of three difficulty levels, and start in any of the five divisions. Also, all of the teams have named players which you can approach with the hope of purchasing, but it must be done before the transfer deadline.

Presentation during the game is not overly elaborate but is simple and user-friendly. There is a total omission of sound, but on this sort of game that is common. The game is enormous and there are a plethora of options waiting to be explored.

Treble Champions is possibly the most complete football strategy game to date – which is no mean feat, I assure you. It is large, complex and, most importantly, addictive – qualities which today's soccer games need to have. Until somebody produces as large a game, but with the capability of having more human opponents, Challenge Software is sitting on the best soccer management game, and has a bright future ahead of it.

Rik Henderson

*Challenge Software is a label for **E & J Software**, a company with a very high pedigree for good quality strategy gsmes. Treble Champions is its first retail release.*

INFO

Gameplay: 50%
Graphics: 40%
Sonics: 30%
Lastibility: 40%
Overall:
40%

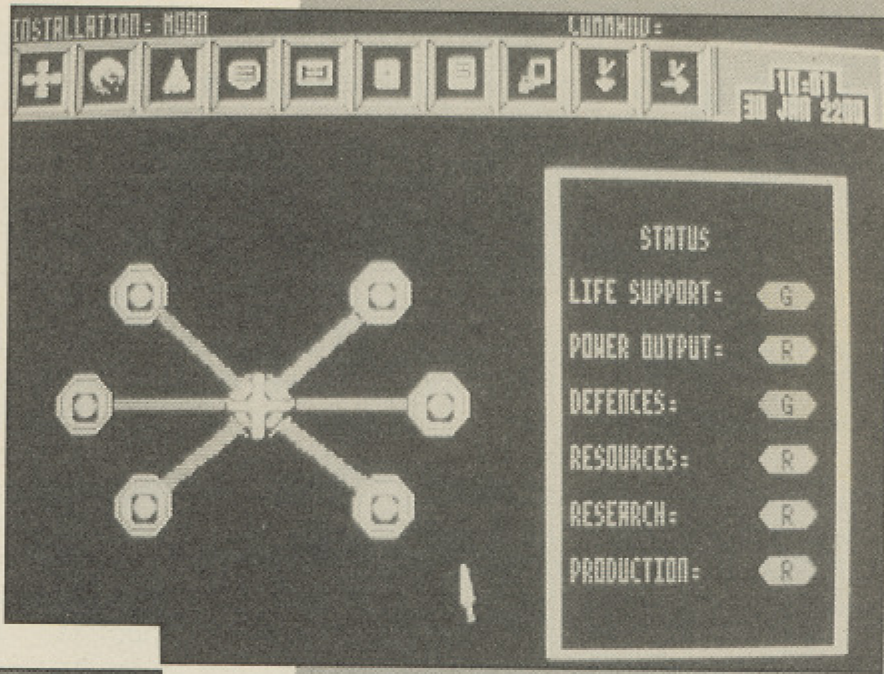




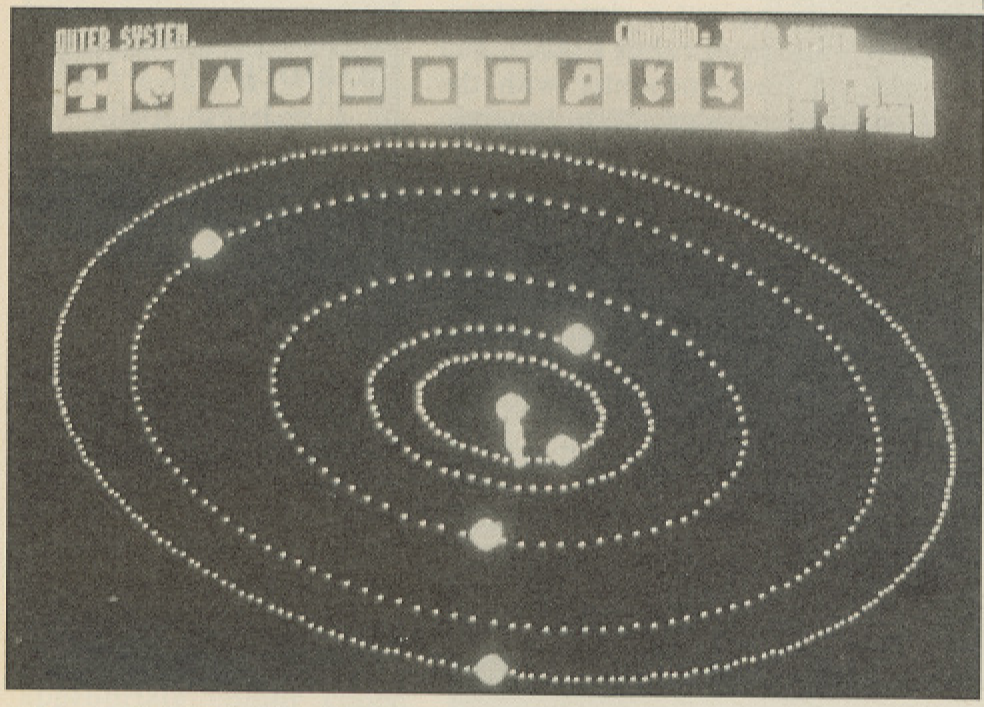
MILLENNIUM 2.2

Electric Dreams - £29.99

The predictions were right. The asteroid did collide with the Earth killing all life on the planet. As commander of the moonbase only you can save mankind.



Above: It takes a Millenium to play the game.



Left: Look mum, little white blobs on my computer screen.

MOONBASE 1 is a small research station with limited production and mining capabilities, a single Mark 1 energy unit and a population of only 100. Through careful management you must ensure the survival of the race by first establishing the moonbase and then setting up colonies on other worlds.

By clicking on the games icons you should soon be able to startup the colonies resource plant that mines raw materials these can be used by the production section to build new energy cells, probes to explore space, nodules to support more people (100 each), fighters to protect the base and bigger and better ships for the exodus into space.

Just when things seem to be going well, you receive a message from Mars claiming dominance in the galaxy and hostility against any moves you make to expand. Undaunted, you send out probes to search the solar system for a moon or planet to colonise as, by now, Moonbase is overcrowded. Sooner or later the Martians will attach and if you've researched and built fighters or orbital lasers you can try and stop them but you'll probably lose some materials and people in the raid.

Although *Millennium 2.2* looks like a strategy game it plays like an adventure and has a series of puzzles that must be solved before you progress. These include the need for raw materials, such as copper, that can't be mined from the moon, the increasing martian attacks and the risk of mutation and alien diseases that can spread rapidly through cargo ships to your other colonies giving you a desperate race against time to research and produce an antidote.

Although this PC version lacks the graphic appeal of others it still captures the feeling of exploring the unknown and the challenge of ensuring the survival of the race.

Tony Hetherington

INFO

Gameplay: 68%
Graphics: N/A
Sonics: N/A
Lastibility: 70%
Overall:

69%

PC

ROBOCOP

Ocean - £24.95

Part film character, part arcade game, all cop. It's the man in a can, and he's gunning for you. If you've been naughty that is.

I'm sure you've all seen the wonderfully violent film, Robocop, and if you haven't then you should jolly well do so. Well, this game isn't quite based on the film as one might expect, but rather on the arcade game that followed.

After seeing the disappointing ST version (the Amiga one should be out now), I was dreading seeing what Ocean could do on a PC. Surprisingly, the PC version is miles better than the ST game, and authentically simulates the arcade game.

You play Patrolman Murphy, once flesh and blood, horribly blown to pieces by gangsters, who are secretly led by one of the senior officers at OCP. Murphy was scraped up, canned, and reprogrammed for law enforcement. Fortunately, what remains of his mind throws up images of the gang, and he sets out for revenge.

Robocop is a game of many parts and levels (nine in all), and starts by scrolling from right to left, with hoodlums leaping onto the screen, all intent on rendering Murphy into a tin of paste. Armed with a standard pistol, three lives, and an ever decreasing energy level, you must fight your way through, picking up ammo along the way. Later in the game you get to pick up other weapons, which you'll certainly need considering what you're up against.

At the end of the first patrol there's an almost 3-D section where you have to nail a criminal who is hiding behind a woman hostage. This is a pleasant break after the first round and a chance to concentrate before the really offensive criminals on level two, some of whom ride motorbikes.

Level four is a photofit against the time test, with information as to Murphy's killer being the reward. After that it's killing all the way, taking out a drug factory, the giant robot ED209, and a final encounter with the mastermind Dick Jones in the Presidents Office.

Robocop isn't an easy game, because poor old Murphy flinches every time a bullet hits him, and while he's doing so he can't fire back. Needless to say there are killing zones at certain points along the way where you are caught in a murderous crossfire, and have great difficulty in getting out with one lift left.

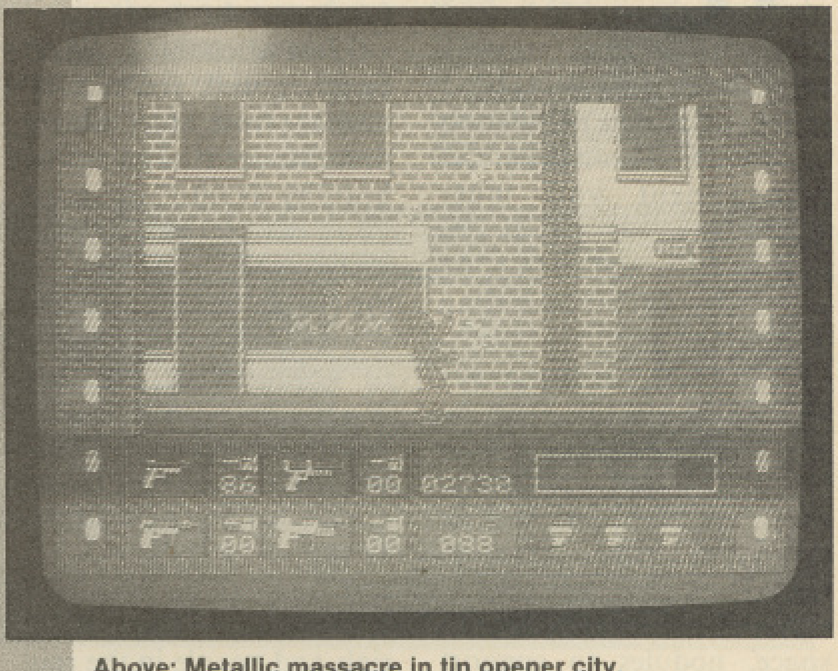
The graphics and animation are pretty good which makes up for the dire sound effects, and with those bonus style sections thrown in to break up the action, this is one patrol worth going on

Duncan Evans

INFO

Gameplay: 87%
Grahics: 80%
Sonics: 20%
Lastibility: 81%
Overall:
84%

*With titles like WEC Le Mans, Op Wolf, Robocop and numerous compilations, that has been **Ocean's** year so far.*



Above: Metallic massacre in tin opener city.

NIGHTDAWN

As the sun sets Gordon Hamlett gets funky with his remote-controlled robot.

Magic Bytes – £9.99 Tape, £14.99 Disk.

RECENTLY qualified from graduate school as a robotronics engineer, you have just started your first job. You are working in the cybernetic control centre involved in planetary exploration.

As a beginner, you cannot expect to be let loose on the latest technology from day one. So you are given control of a second rate robot to do your dirty work. The planet to is explore not what it seems. Real planets being a touch expensive, the company has leased an artificial one consisting of some ten different platforms. The idea is that you guide your robot over the surface trying to find the exit to the next level. Succeed on the first five platforms and you are given control of the latest in robot technology for the next five.

The platforms consist of a series of small mazes with different areas only accessible when you have the appropriate colour coded key. There are creatures that shoot at you and hidden mines, all of which is bad news. At the start of the game, you have no defences at all. You must find your laser and mine detector first. There are also one way escalators and transporter pads to be negotiated.

There is nothing original about Nightdawn. Wandering round mazes looking for different keys has been seen many times before and there is nothing extra in this game to make you sit up and take notice.

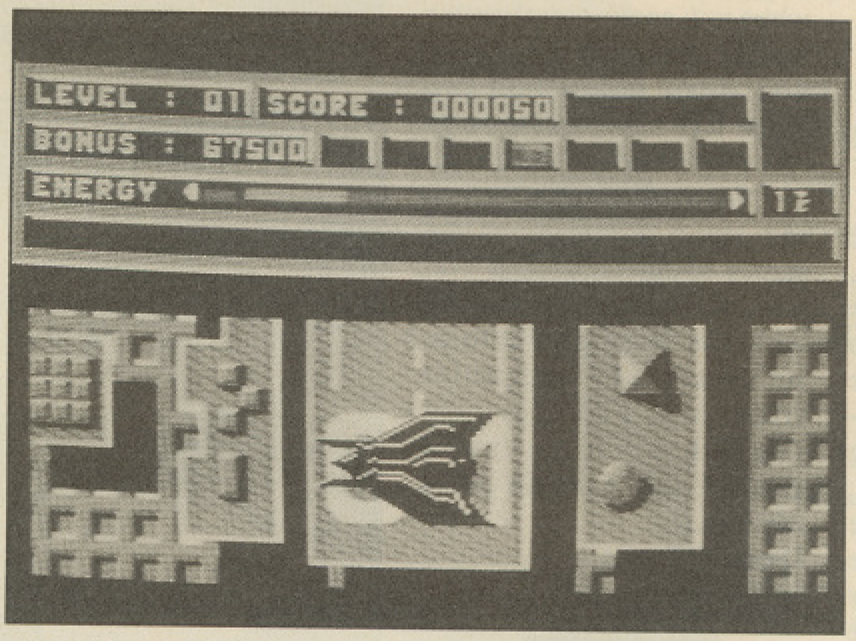
The graphics are poor – fuzzy, blurred and small. Indeed, the Amiga version was similarly disappointing –looking more like I imagined this C64 version should look.

There is nothing particularly wrong with Nightdawn, it just doesn't generate any degree of excitement whatever. Lasting appeal is limited too. Once you have learned the best path through a particular level – where the traps are and so on, there is nothing to stop you completing that particular level again with great ease, every time you play.

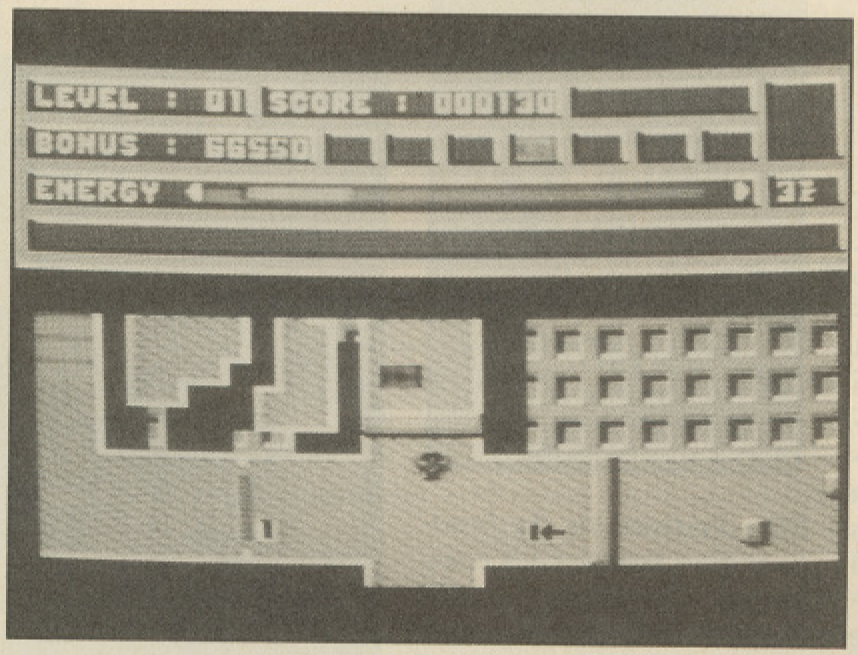
INFO

C64

Gameplay: 50%
Graphics: 40%
Sonics: 30%
Lastibility: 40%
Overall:
40%



Above: Oooh, what a large metallic sprite!

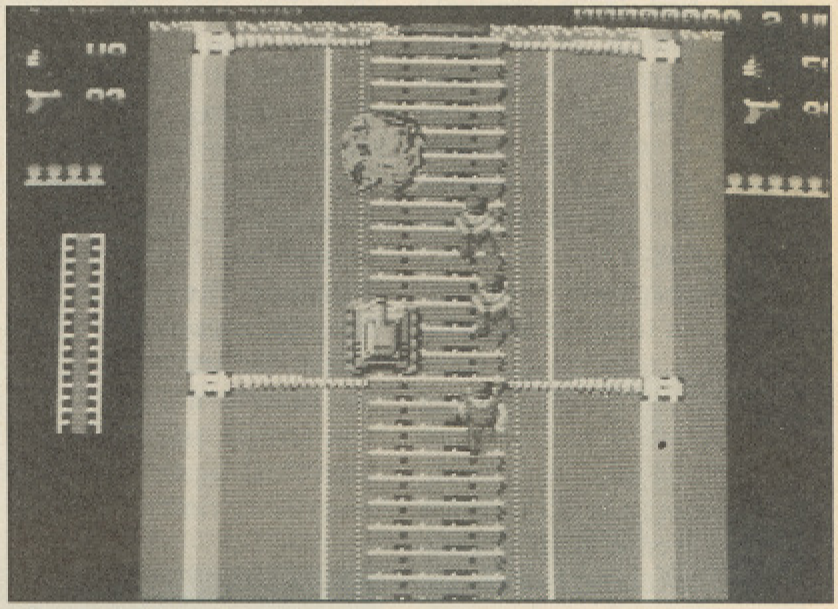


Above: Wot no large metallic sprite!

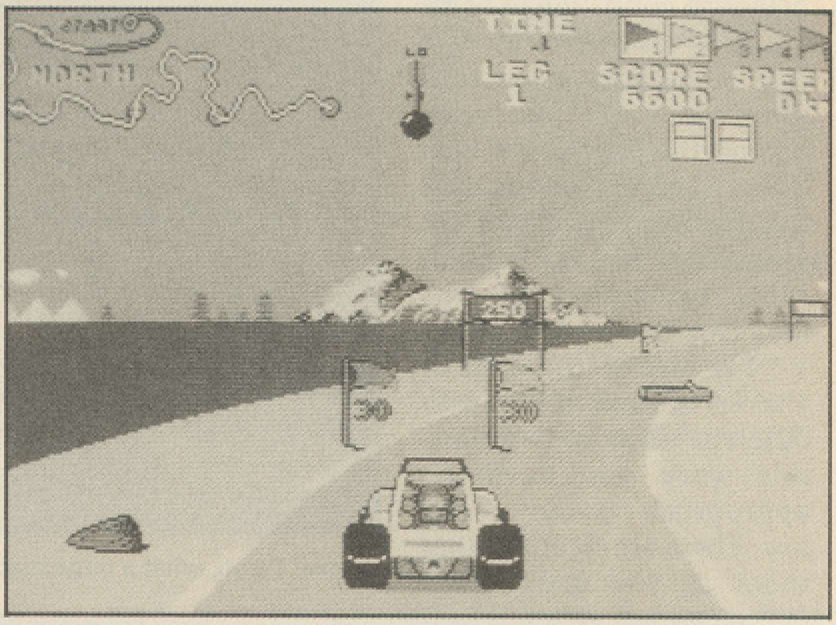
THE STORY SO FAR

Elite – £19.99

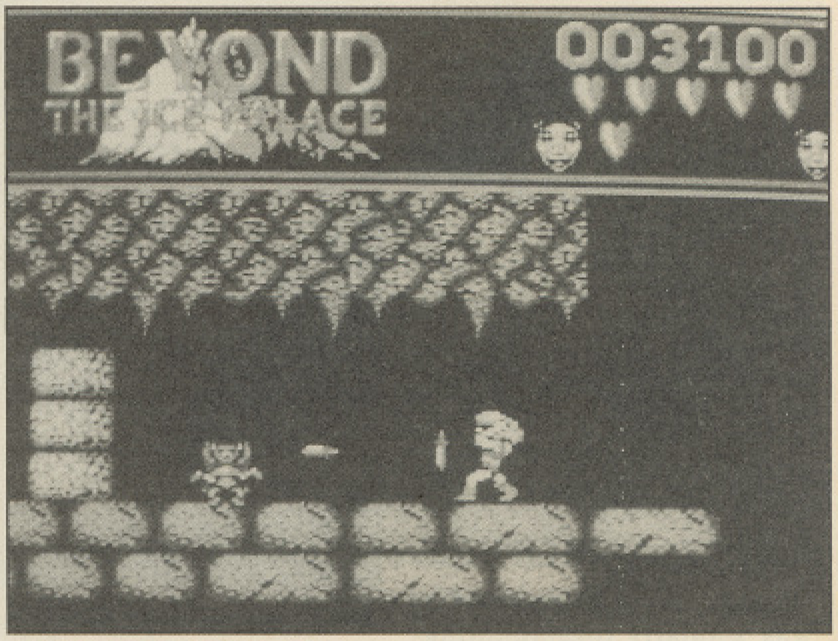
Only a compilation, or a potted history of Elite Systems work on the Amiga? Duncan Evans gives you the real story.



Above: Ikari Warriors.



Above: Buggy Boy



Above: Beyond the Ice Palace.

Compilations are nothing new, and you might say nothing exciting. If you wanted to be really cruel you might also say they were cynical marketing exercises designed to tempt the 'present shopper' into buying what young Johnny already had anyway.

Compilations can be value for money, but looking at this one from Elite it appears that The Story So Far is a pretty short one. Four games is rather stingy, especially as it doesn't contain one of Elite's better games Overlander, or even Live and Let Die which the 8-bit packages get.

What you do get are Buggy Boy, Ikari Warriors, Battleships and Beyond the Ice Palace. Buggy Boy was a 3-D racing game, with five tracks, and loads of obstacles rather than competing cars.

With bonus points, time gates and the ability to drive on two wheels, and then fly through the air, you can see this isn't exactly Monaco. It is good fun though, because the tracks are graded in difficulty and even the fading reactions of this old hack are good enough to complete the first three.

Ikari Warriors is one of my favourites, being the first arcade Commando style game to feature simultaneous two player action. It isn't stunning on the Amiga, in fact it looks just like the ST version, but it is very playable and features tanks with which you run the gooks over, as well as shooting and grenading them.

There's a lot of surface gloss on Battleships, but that doesn't cover up for the fact that this is a very standard conversion of the pen and paper game. I suppose it'll save a few trees, and you can play against the computer should you be so bored.

And finally off we go into arcade adventure land with vertical and horizontal scrolling, three types of weapon, dreadful sound effects, decent graphics and very rough gameplay. Just getting through the first level of Beyond the Ice Palace is a major achievement, and when you encounter the even harder guardians of level two you'll realise that this game has never been properly playtested.

Normally compilations can stand a couple of the games being naff, or if you already own one or two, but with The Story So Far there isn't really any margin for error, and whichever way you look, you're not exactly getting the bargain of a lifetime.

Duncan Evans

INFO

Gameplay: 82%
Graphics: 80%
Sonics: 72%
Lastability: 84%
Overall:

80%

Elite Systems hit the headlines after running ads comparing Overlander to US Gold's Roadblasters, and hasn't released anything more since.

YOUR
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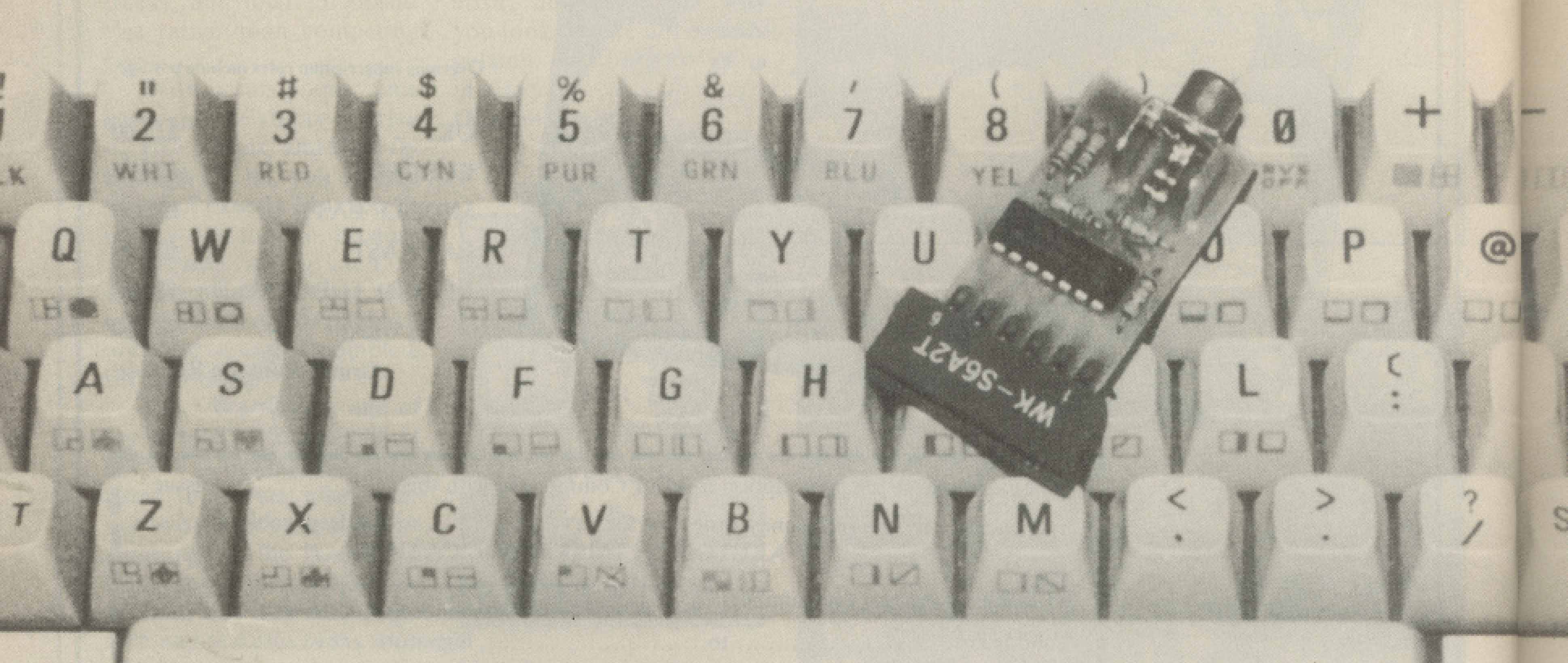
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1st CD EDITION

Can the ageing Commodore 64 keep up with the brash young upstarts of the 16-bit world. Maybe it can, with this CD interface from Rainbow Arts.



There has been a lot of speculation about what CD-ROM is going to do for the computer and entertainment industry. Gigabytes of code, film like animation sequences stored on CD, with stirring musical scores to accompany the action.

Even now we are seeing the emergence of the new technology, witness Mirrorsoft releasing Defender of the Crown on CD for connecting up to PC's. There's the PC Engine, with its CD software, and who knows that is around the corner.

Well like you I can only guess, but I'd never have guessed what Rainbow Arts was going to do. In a seemingly bizarre marketing move, the company has released the 1st CD-Edition. This package contains an interface which plugs into the cassette port, a CD and an instruction manual.

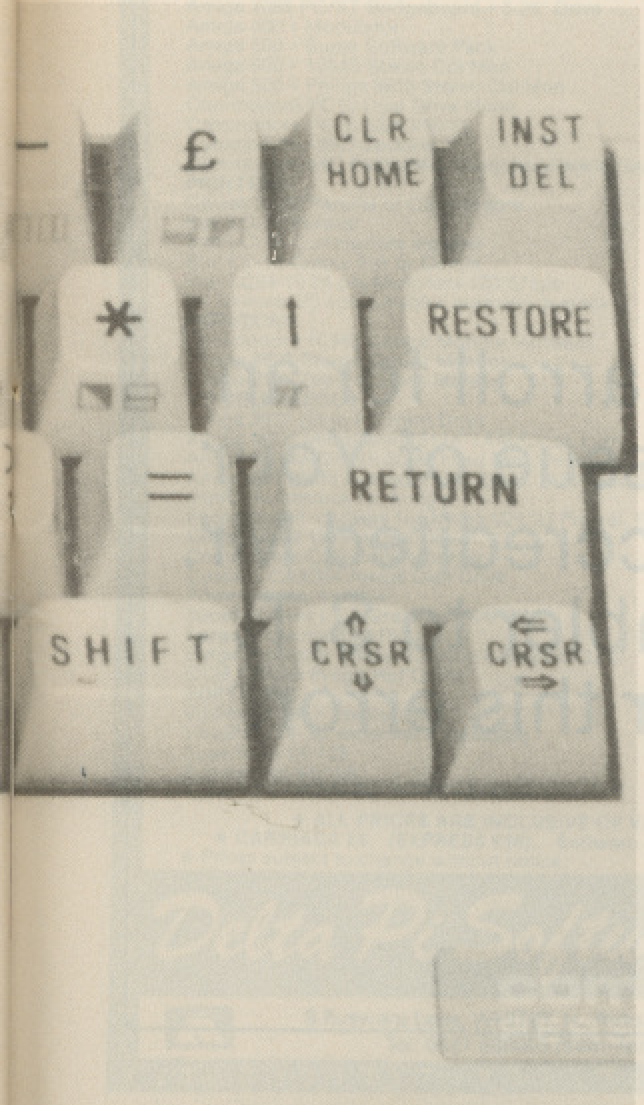
The interface which translates the audio output of a CD player into the audio format of the cassette port is small and fragile looking. It isn't even boxed and gives the impression that a moment's carelessness would result in it being snapped in half.

The only catch with this package is the CD player. Unless the game's on the CD, for this is a compilation, were of such brilliance that it was worth laying out £150 or so for the CD player, or you already had one, then it isn't going to be of much use.

Setting everything up is a minor hassle, simply because of the need to have all the equipment in close proximity. It says in the manual that you can use a portable CD unit just as easily, and as this is far easier to set up I gave that a go.

Plug in the interface, connect a phono plug lead from the interface to the Line out on the CD player, turn on your C64 and insert your disc and you're ready to roll. Easy enough, you then just type LOAD and set the CD player in action. After about 45 seconds you should be into the main menu, and the CD player can be stopped or paused now. Alas the portable CD unit didn't like working with the interface so it was necessary to haul the big unit out. Take note, if you only have a portable, it might not work.

My main unit worked fine though, and the menu offered a choice of ten games for my delectation. After making a selection, the menu informs you to jump to a specific track number where the game is stored, then press space. After anything between 30 and 50 seconds later, the decompacked program is running happily and you can turn the CD player off.



This is all good and well, but let's look at what you're getting a bit closer. For one thing the loading time isn't particularly fast. In fact it's quite slow when you realise how little data is being loaded, but is comparable with today's fast loaders on the C64 disk drive.

How much room on the CD does all this take up? About 11 minutes worth, and that's padded out. To try and fill up the rest of this very empty disc, the programs are recorded twice, simply add 20 to the track number to access them, and there is a selection of 10 music tracks by Chris Hulsbeck (who?) to listen to through your amplifier. These music tracks are nothing special, and not worth buying the CD-Edition for.

The actual games, almost an oversight in this strange project are not your state of the art games. Some of them are older than my mother, but for the record, this is what you get: David's Midnight Magic (pinball), Leaderboard, Mission Elevator, Impossible Mission, Dropzone, Loderunner, Solomon's Key, Jinks, M.U.L.E, and Fist II.

Although Rainbow Arts has been quite brave in testing the water with this package, it has cut corners as far as paying for new games and the production standards of the interface are concerned.

If you don't have a CD Player then forget it. If you already do, and you can lug it close enough to your computer then all you have to worry about is whether you really want the benefit of having ten very old games and some forgettable music on a compact disc. This isn't the technology of tomorrow, this is Rainbow Arts trying to cash in on a current fashion.

Duncan Evans

Editor's Note

Apologies must go to Mr. M. Carroll for an error published in the August issue of Your Commodore. On page 54, we accredited Mr. Carroll's program, Disk Scrambler to S.T. Burke. Apologies all round for this error.

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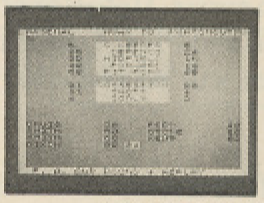
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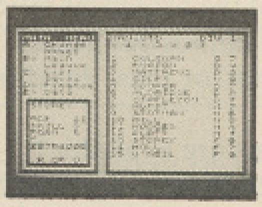
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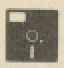
Programs on the disk will also be supplied as totally working versions, i.e. when possible we will not use Basic Loaders thus making use of the programs much easier. Unfortunately at the moment we cannot duplicate C16 and Plus/4 cassettes. However programs for these machines will be available on the disk.

What programs are available?

At the top of each article you will find a strap containing the article type, C64 Program etc. So that you can see which programs are available on which format, you will also find a couple of symbols after this strap. The symbols have the following meaning:



This symbol means that the program is available on cassette.



These programs are available on disk.

Please Note

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NEXT MONTH



A NIGHTMARE ON ELM STREET

Freddy Krueger – the man with the designer cooking utensils strapped to his fingers – is finally to make it to the home computer.

NEON ZONE

The man with many columns (ooer!), John Cook, deals us a dose of arcade action, and explores many coin-op licenses.

COMIC WATCH

A look at the wonderful world of men in tights, and their related computer games.

Plus Play By Mail Games (honest), More Wobbly Compos, Loadsareviews, and Your Programmer...

THE END IS NIGH



Landscape Gardening

APPARENTLY, according to a press release sitting in front of me, there is to be a new landscape for the immensely popular Populous (so popular in fact, that the ST and Amiga versions rose to 3rd spot in the 8-bit chart in Computer Trade Weekly). Originally plans were to have it based on Samurai legend, but wild and wacky Electronic Arts has a far better idea in mind.

The new landscape is now titled 'The Bit Plains', with computer print-out paper as the land, computers as the settlements (from the ZX81 to a Cray) and cigarette stubs and pencils as landscape features. To be honest, I think there's a little limb tugging going on here.

Earwig 'O'

On a charitable note, the Grandslam charity football match (which the journos lost abysmally last year) is to go ahead, and certain companies are taking it very seriously indeed.

The charity in question is the Hills-borough disaster appeal – a charity close to my own heart due to my support for Liverpool Football Club. Some companies are taking the game so seriously that they aim to field very strong sides. One company (who shall remain nameless) have even announced that Kenny Swain (ex-Manchester City player) will be in their squad.

Let's just hope that the reason for playing is not washed over by inter-company rivalry.

Gang Bang

PSYGNOSIS has recently announced the fact that they have lost a large consignment of copies of Blood Money in a hijack of a British Lorry bound for Paris. Although the lorry contained valuable clocks and lighters, the French gang involved only stole the Amiga version of the recent game.

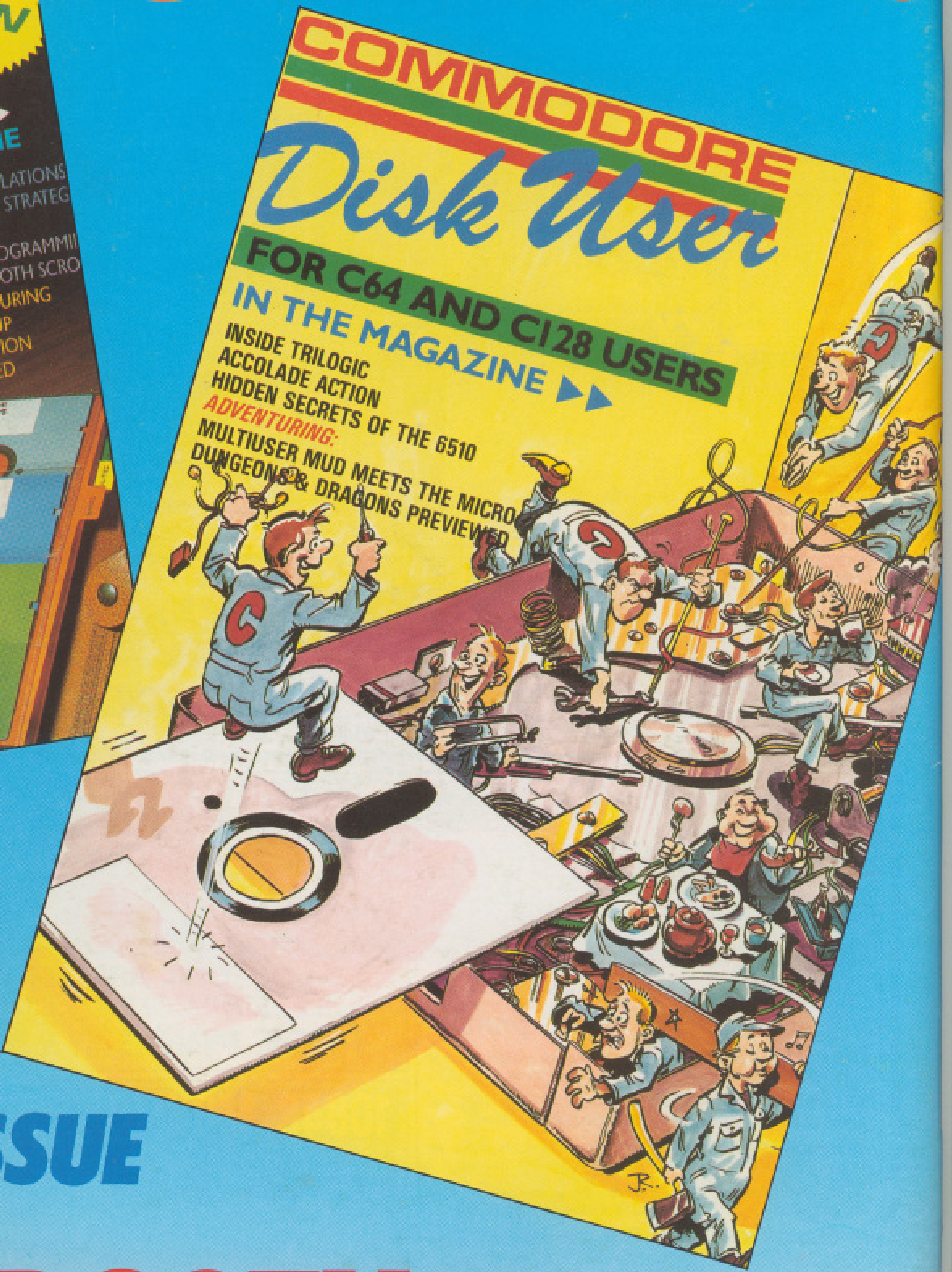
If you're stopped whilst strolling through the streets of Paris, and asked by a dirty French man in a brown coat smoking Gaullois, if you would like to purchase a piece of software, don't worry, he's not trying to sell you a dodgy sex aid.

I'll see ya next month...
Rik Henderson

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